ENGINEERING NEWS-RECORD

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▶ Little [illegible] gages may [illegible] big savings [illegible]

Clearing the way for a 4,470-mile scenic route *p.38*

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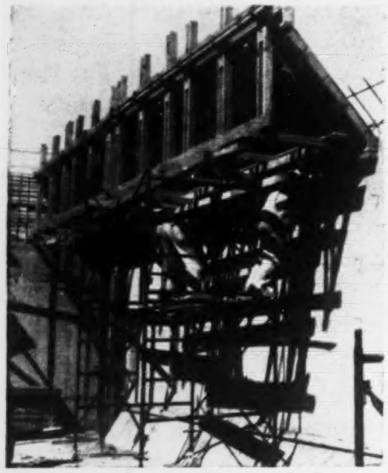

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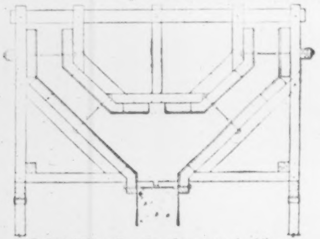

Typical "Y" wall section. Symons panels, fillers and bay corners were gang formed in sections.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request.

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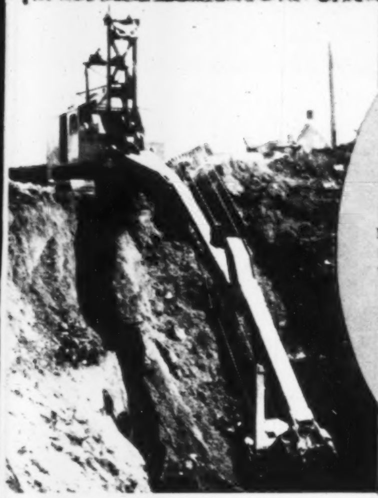

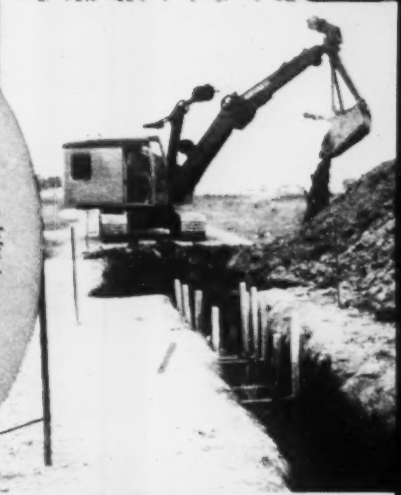

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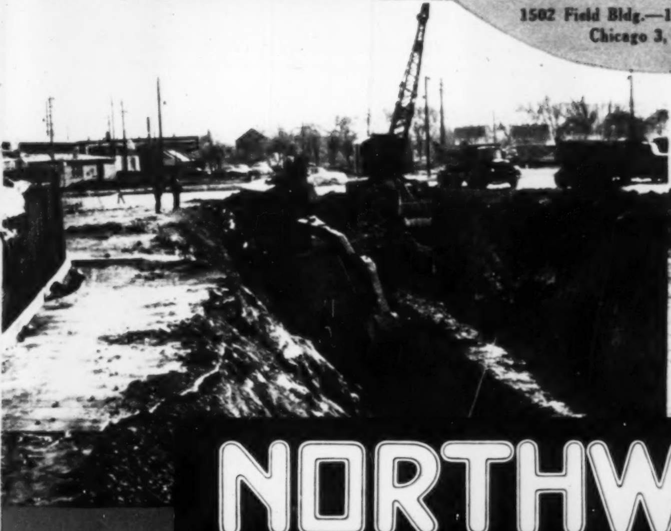

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2. **DUST AND DIRT STAY OUTSIDE** when you lubricate wheel bearings, chassis and water pump with Texaco Marfak Multi-Purpose 2. Marfak **stays put** despite shock, vibration and moisture.

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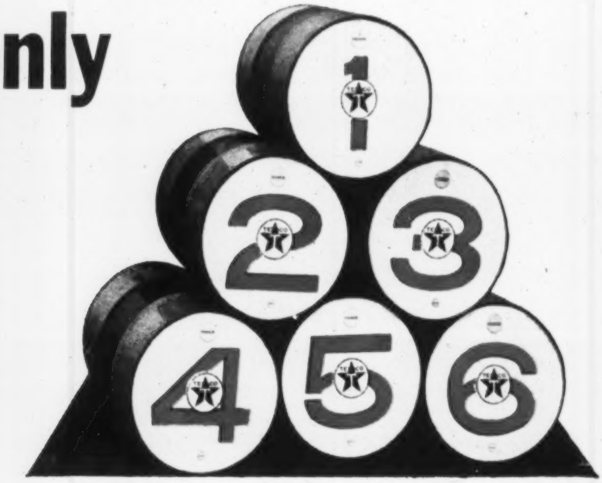

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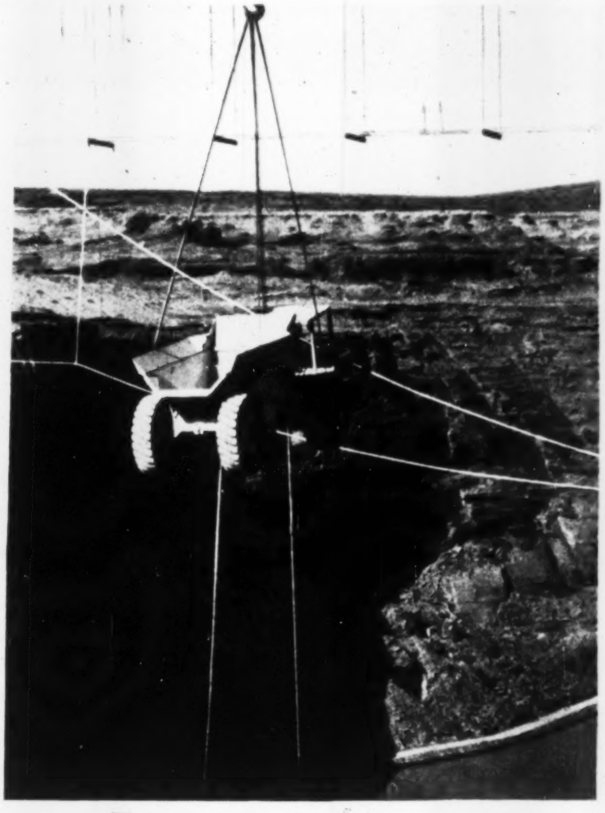

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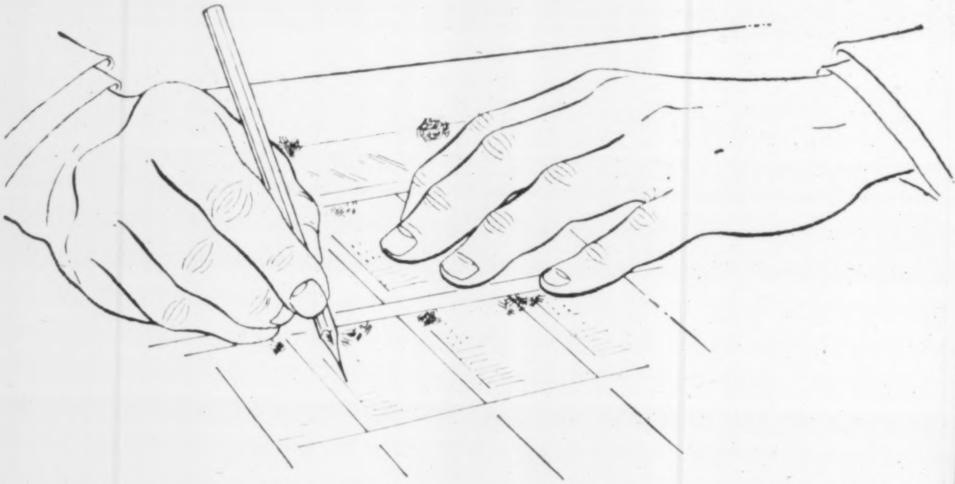

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Goodyear has built *MORE* pneumatic tires than anyone else. This Goodyear record is your assurance that selection of tires for *your* jobs is based on the broadest practical experience available anywhere and today's top tire-building advancements. For Goodyear paces the industry with the most practical tread and body designs, rubber compounds and Triple-Tough 3-T Nylon Cord—GREATEST TIRE SAVER IN 24 YEARS.

BIG-TIRE SERVICE

Finally, Goodyear Big-Tire Specialists help you set up, and even operate, a tire-maintenance program to save you BIG MONEY in man-hours, machine hours and useful tire life. This includes proper mounting, mating and rotating of tires; correct inflation, cleaning and regular inspection to insure that small injuries are found and repaired before expensive damage can result. In fact, Goodyear can, and will, supply any degree of Big-Tire Service that any contractor can profitably use on any job anywhere.

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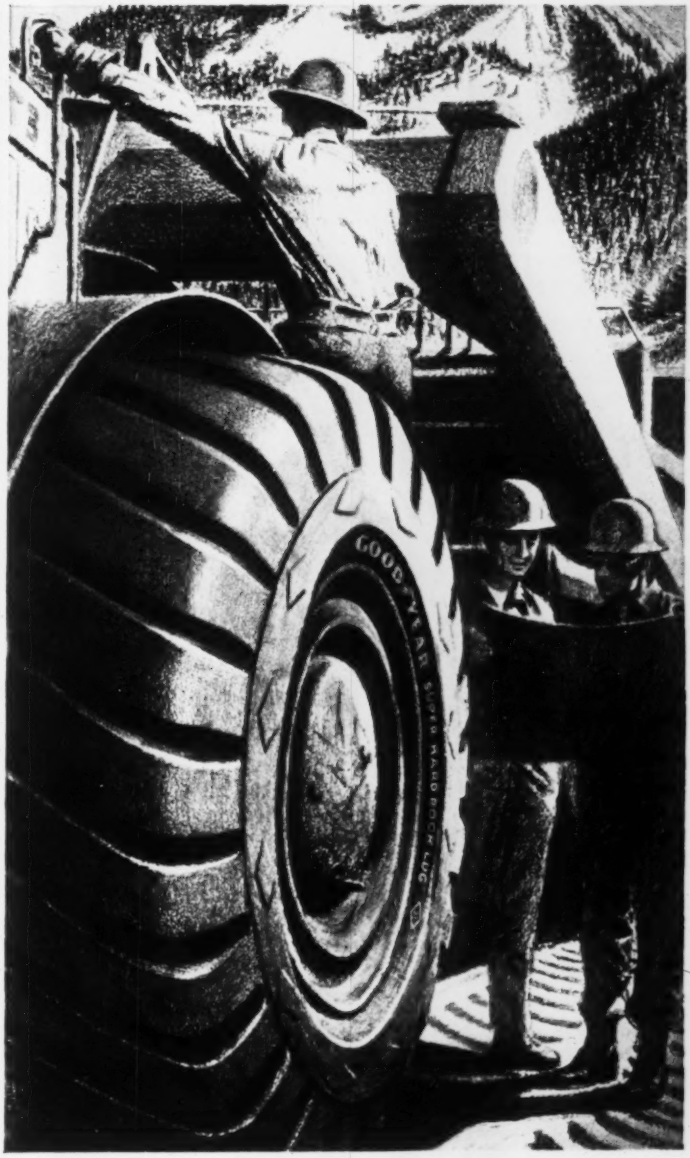
Goodyear has the right tire for every wheel. When the job calls for a wide-base earth-mover tire, for instance, Goodyear's new SUPER HARD ROCK LUG delivers the best all-round performance. This Super Tire, made with the new "square" shoulder design, packs a hefty rubber bonus for stronger bite, longer wear. Yet, it costs no more than conventional wide-base tires. For full details, see your nearby Goodyear dealer, or write: Goodyear, Truck Tire Dept., Akron 16, Ohio.



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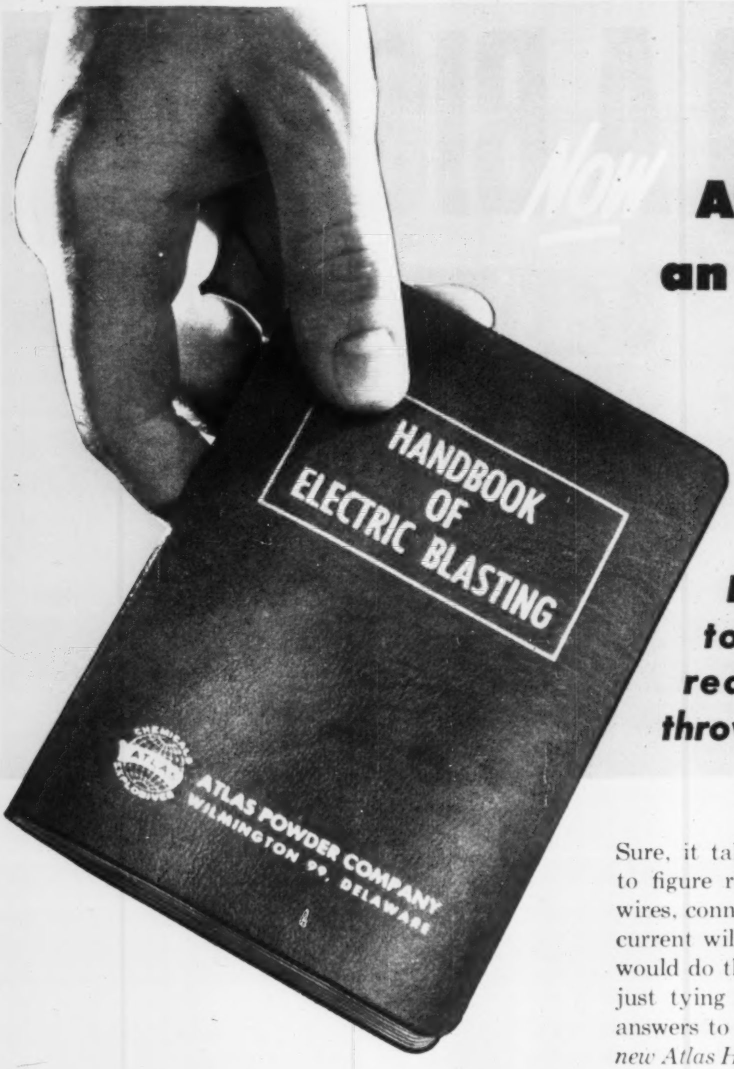

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What Desalted Water Costs

SIR—The inference from your article on sea-water conversion (ENR March 12, p. 24) is that prospective conversion costs are being reduced to some three times the present customer cost, or approximately $1.00/1,000 gallons as against $0.30/1,000 gallons.

In 61 private water utilities serving some 3.5 million people in the northeast quadrant of the country, the customers paid 28.3 cents/1,000 gallons of water produced in 1956. That was the cost of water delivered to the tap. Since some 75% of the total investment in a water plant is required to pump and distribute the water, a substantial part of the delivered cost is due to this factor.

Further, a large part of the cost results from such business expenses as reading meters, accounting, billing and collecting, and administration. For a private utility, taxes absorb nearly 20% of the total revenue received.

The actual costs of collecting and processing the water, including return and depreciation on the investment, and the applicable taxes, averages about 10 cents/1,000 gallons. This is the figure deemed comparable with the figure you mentioned, $1.00/1,000 gallons. You don't make it clear whether or not capital costs are included. Certainly, taxes are not.

Water is worth whatever it costs to get it when it is needed. There are many areas in the world—fortunately not many in the United States—where sea-water conversion is and will become more and more needed, and where the product will prove economical when compared with present methods of supply. The experiments now going on and proposed should go forward and practical applications made.

It is a little misleading, though, to compare the costs as they have been. Once having solved the legal and political problems involved in the development of our water-resources, engineers can spend a lot more money on developing such resources in this country without approaching the cost of converting sea-water, or even high-chloride water.

E. H. ALDRICH
Chief Engineer
American Water Works Service Co., Inc.
Philadelphia, Pa.

SIR—Your story titled "U. S. Plans Big Sea-Water Distillery" could easily give the reader a false impression as to the relative cost of desalted water and water from a public system.

You say: "Conversion cost in the new plant is expected to run less than a dollar per thousand gallons. This is half the cost of the best operation at present but still three times what most American consumers pay for water."

Exactly what constitutes "conversion cost" I can't say—but I assume it to cover only the production of water and the capital costs of the distillation plant. It would not include, for example, high-lift pumping and distribution, but would take the place of treatment costs in a public supply.

I wish to stress the point that a direct comparison of conversion costs with the cost of water to customers of public systems is not correct. The latter costs involve many factors such as (1) collection of supply, (2) treatment, (3) pumping, (4) distribution, (5) storage. Of these items, distribution is by far the most expensive. Usually the capital investment in distribution represents from 70% to 90% of the total invested in the system.

The AWWA Survey of Water Utility Operation in 1955 shows that for those towns where filtration or softening is involved (major treatment), water rates are 23% higher than where only minor treatment (disinfection) is required. If this percentage is applied to the average cost of water from public supplies (30 cents per 1,000 gallons) it amounts to about seven cents. Thus the average cost for supply, pumping, distribution and storage represents 77% of the rate.

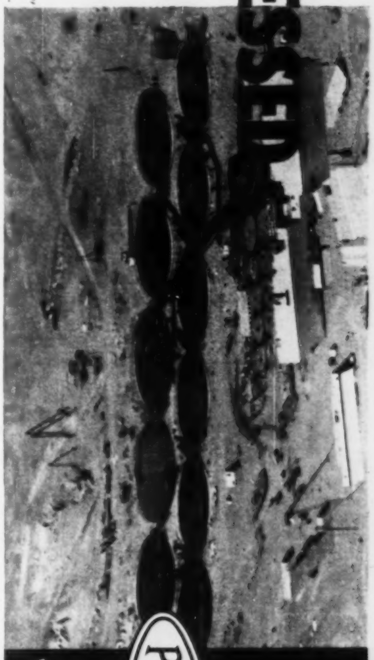
If conversion costs about $1.00 per 1,000 gallons, then the added cost to deliver the water to the consumer would approximate 23 cents, making a total of $1.23. That cost could be compared directly with the 30-cent charge for water from a public system. The ratio between the costs, therefore, is 1 to 4 and not 1 to 3 as suggested.

RAYMOND J. FAUST
Executive Assistant Secretary
American Water Works Association, Inc.
New York, N. Y.

Editor's Note: Office of Saline Water says costs projected for salt-water conversion do not cover distribution, but do include capitalization with a 20-year, 4% loan, debt service, plant depreciation and water production.

(Reader Comment cont'd p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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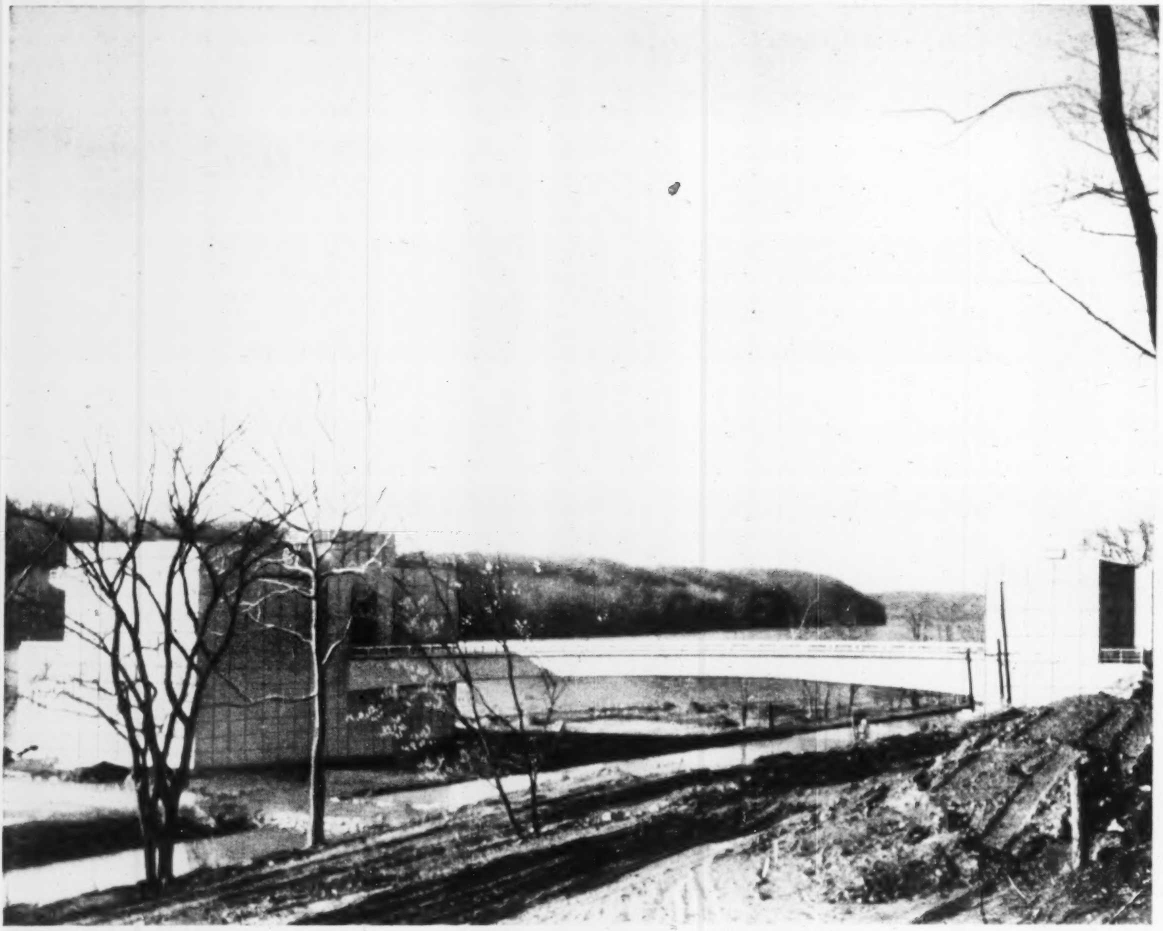

Consulting Engineers: Black and Veach, Kansas City, Mo.
General Contractor: James McHugh Construction Co., Chicago

SHALLOW 216-FT. SPAN OF

prestressed concrete carries H20-S16 loading

Project engineers chose a graceful box girder of prestressed concrete for this bridge that connects the Little Falls Pumping Station to its electrical substation across the historic Chesapeake and Ohio Canal, not far from Washington, D.C.

The girder—7 ft. deep at mid-span increasing to 12 ft. at the supports—was cast in place without use of diaphragms and post-tensioned. 16″ sidewalls are used with top and base slabs 8″ to 10″ thick. For added strength, the base slab has 12″ high stiffeners every 15′.

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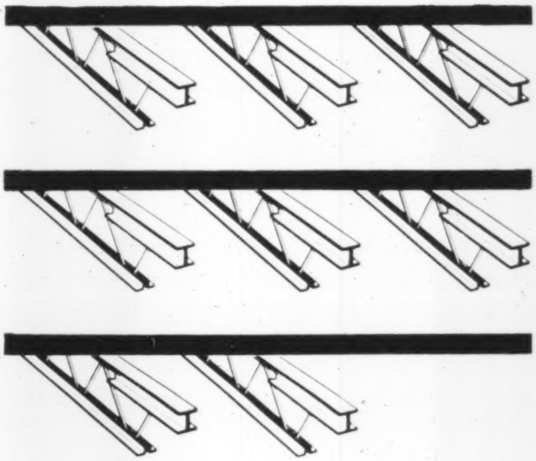

SJI adds 8 more types to RECOMMENDED SERIES "S" JOISTS

Types of Series "S" open web steel joists recommended by the Steel Joist Institute have been increased from 17 to 25. This wider range of selection provides several important added advantages, such as greater flexibility and a more exact application of open web steel joists for given structural loads.

The SJI members are now offering all types of "S" Series joists based upon 20,000 psi working stress, and the SJI has published new combined specifications and load tables as a handy reference for the designing architect and engineer.

These new developments by the Steel Joist Institute give added assurance that you can specify with confidence when using steel joists produced in accordance with the standards and specifications of the Steel Joist Institute.

Send coupon for free copy of combined specifications and load tables.

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Businessmen Needed

SIR—The letter by Henry Wilcox of South Norwalk, Conn., suggesting "Hire Mr. Eaton?" (ENR Mar. 19, p. 18) merits consideration. (The letter related to the tremendous costs involved in the missile program—Editor.)

If a fraction of the engineering intelligence, knowledge and skill which has been wasted on destructive schemes and measures in recent years went into the study of sound economic order, there would not now be enemies, or the problem of inflation and depression to keep us in constant fear of tomorrow.

War is the No. 1 enemy without doubt. It is created by maldistribution, which in turn causes chaos, inflation, depression, stagnation and poverty. The need of today is not more engineers but rather more economists with the scientific knowledge and faculty for solving problems.

Cyrus Eaton is a businessman and, therefore, knows the importance of positive cooperation and coordination in any field of human activity. The political mind, on the other hand, directing the destiny of nations, is spiritually fearful, cowardly and physically barbaric and brutal in behavior when faced with competition.

In business, excellence of performance and product is without competition. Therefore, economic problems can only be solved by those having a sound business philosophy and psychology.

G. S. SZMAK
Industrial Economist
New York, N. Y.

Roof Failure

SIR—In the article on the roof failure of the Parke-Davis Branch Office and Warehouse in Skokie (ENR Mar. 5, p. 23) you named Harry Weese & Associates as resident architects. Since the owner wished to put on a full-time superintendent and did so as of November, 1958, Harry Weese & Associates were not the resident architects at the time of the failure and had not been for some months.

The construction followed an alternate design made and guaranteed by Basalt Rock Company. Ammann & Whitney reviewed the drawings and made a number of visits to the site during construction.

MINORU YAMASAKI
Minoru Yamasaki and Associates
Birmingham, Michigan

Is Too Big?

Sir—Several questions occur to me after reading This Is a Shopping Center—Texas Style (ENR Mar. 12, p. 22):

How many miles or feet must a shopper walk from a parking stall in the remote area of the premises to the door of every one of the 41 stores? Is the shopper expected to carry his pur-

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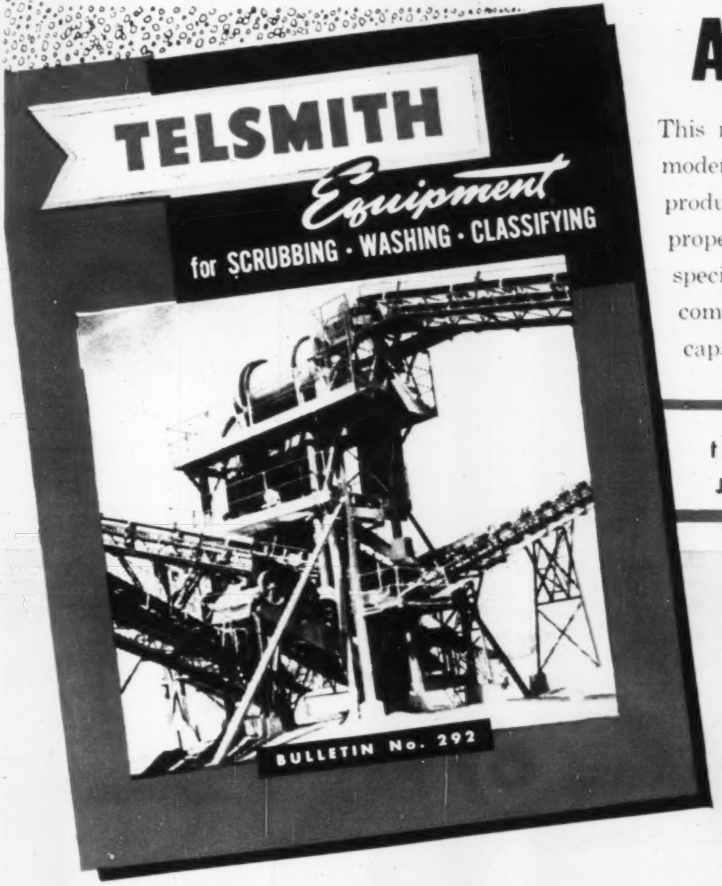

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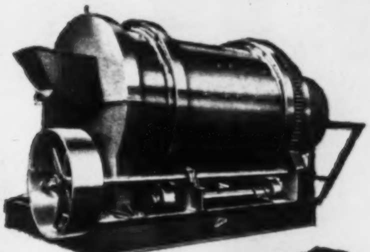

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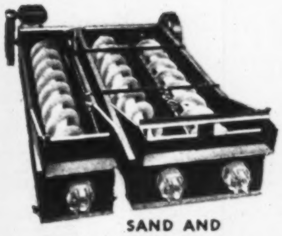

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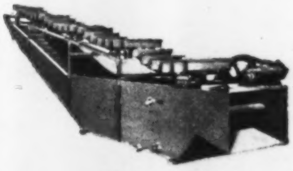

SAND DRAGS

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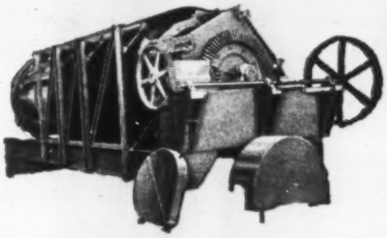
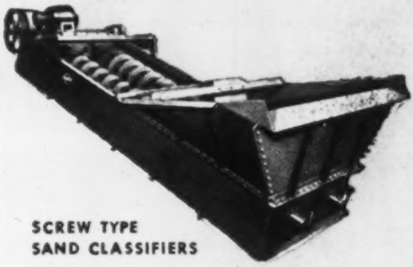


WASHING SCREENS



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All Barber-Greene continuous asphalt plants give maximum capacity in all size ranges for lowest cost production. They offer greater versatility than ever before available. The same mixer, without alteration, may be used with any combination of plant components to produce all types of mixes—from the simplest cold mixes to the highest types which must meet the most rigid specifications.

It is only necessary to transport and operate the components required for the job:

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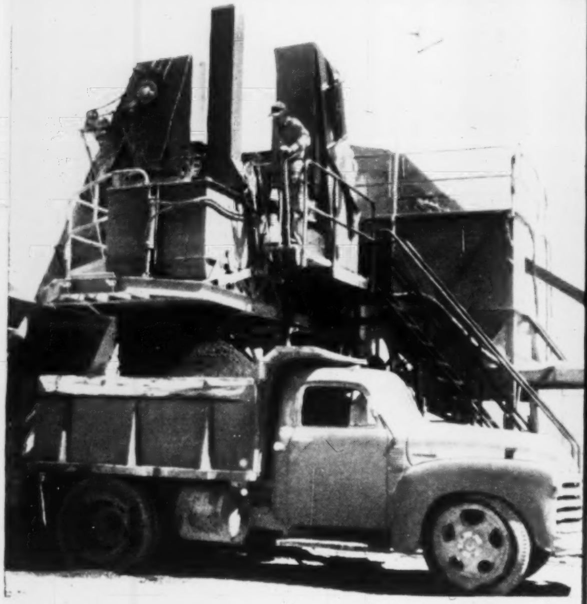

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57-12-A-B

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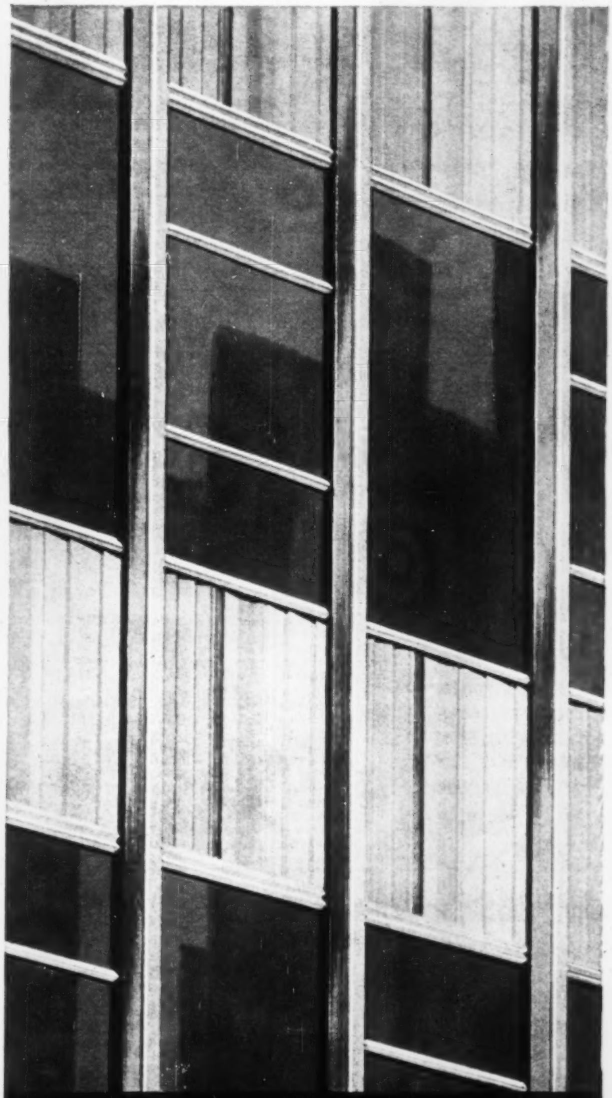

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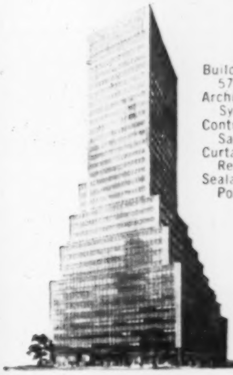

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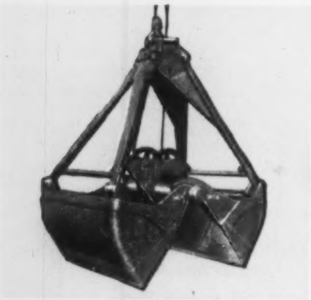

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OWEN'S patented independent tine action 4-prong grapple has proven itself invaluable in land clearing operations. Its independent tine action guarantees positive contact and tremendous gripping power on each of the four tines, no matter how irregular the shape of the object may be.

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100

chased bundles of merchandise from the store to his car?

With space for 7,000 cars on the parking area, which averages 171 cars per store, how many of the car spaces are used by shoppers and how many by the store owners and their employees?

Has the traffic of pedestrians been eased by providing underground sidewalk belt conveyors from remote corners of the parking area to the stores, with stops along the way for entry and departure?

With the Texas-style shopping center serving as the trading area for a quarter million persons, what protective measures have been provided in line with the national defense and provisions program?

Is the entire shopping center predicated on the assumption that the nation will never again have a shortage and rationing of gasoline for private automobiles?

JOHN H. D. BLANKE
Technical Writer
Barrington, Ill.

For Your Calendar . . .

Southeastern Instrument Society of America Conference, Gatlinburg, Tenn., Apr. 20-22.

Joint Meeting, Western Snow Conference and the Colorado River Forecasting Committee, Mapes Hotel, Reno, Nev., Apr. 21-23. Write N. S. Hall, Soil Conservation Service, 1485 Wells Ave., Reno, Nev.

Roofing and Sheet Metal Contractors, Palm Beach-Biltmore Hotels, Palm Beach, Fla., Apr. 23-25.

Galvanizers Committee of the Steel Industry Meeting, Drake Hotel, Chicago, Ill., Apr. 23-24.

American Institute of Architects, Great Lakes Conference, Ann Arbor, Mich., Apr. 24-26.

Association of Iron and Steel Engineers, Hotel Statler, Buffalo, N. Y., Apr. 27-29.

Annual General Meeting of Consulting Engineers Council, Biltmore Hotel, New York City, Apr. 28-May 3.

American Society of Testing Materials, Detroit District, Detroit, Mich., Apr. 29.

American Society of Mechanical Engineers Metals Engineering Conference, Hotel Sheraton-Ten Eyck, Albany, N. Y., Apr. 29-May 1.

American Society of Civil Engineers Summer Convention, Sheraton-Cleveland Hotel, Cleveland, Ohio, May 4-8.

Purdue Industrial Waste Conference, Purdue University, Lafayette, Ind., May 5-7.

International Commission on Irrigation and Drainage Technical Conference, Reno, Nev., May 11-12.

Symposium on Industrial Uses of Radioisotopes, Georgia Institute of Technology, Atlanta, Ga., May 11-12.

46th Annual Convention of the National Rivers and Harbors Congress, Mayflower Hotel, Washington, D. C., May 13-14.

American Concrete Agricultural Pipe Association, Brown Palace Hotel, Denver, Colo., May 13-15.

Building Research Institute Conference on Building Illumination, Statler-Hilton Hotel, Cleveland, Ohio, May 20-21.

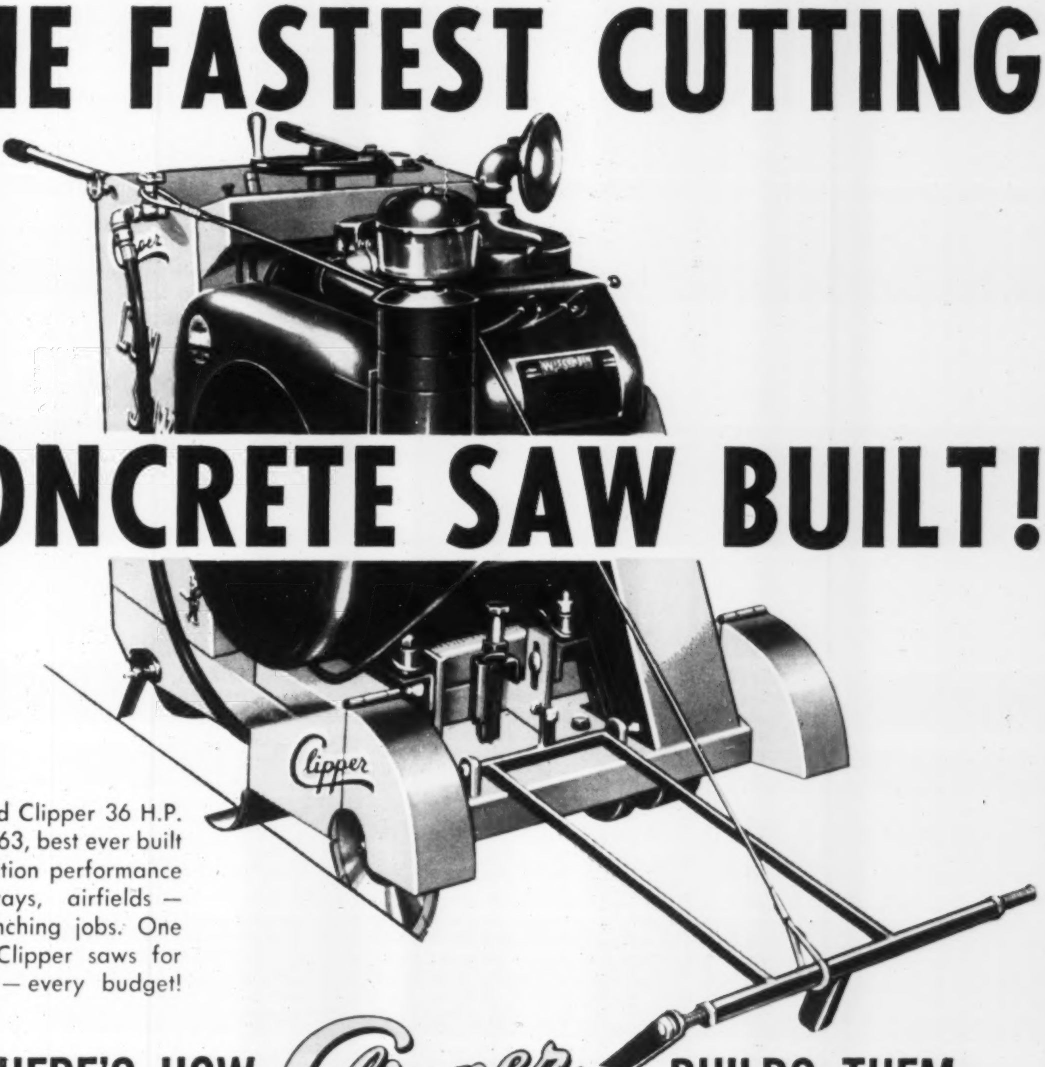
Jet Airport Conference of ASCE Air Transport Division, Shamrock-Hilton Hotel, Houston, Tex., May 20-22.

Design Engineering Show, Convention Hall, Philadelphia, Pa., May 25-29.

Wire Reinforcement Institute Annual Spring Meeting, the Greenbrier, White Sulphur Springs, W. Va., May 25-26.

Concrete Reinforcing Steel Institute, Annual Meeting, the Greenbrier, White Sulphur Springs, W. Va., May 25-30.

THE FASTEST CUTTING



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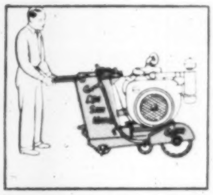
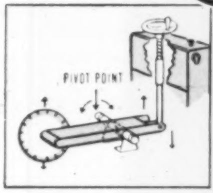
The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

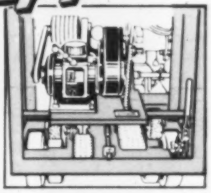
AND HERE'S HOW Clipper "SAILS RIGHT THRU" BUILDS THEM . . .



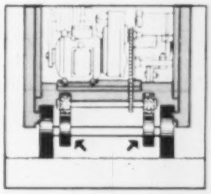
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



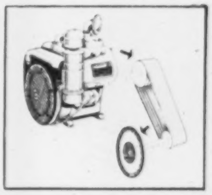
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed . . . which gives you positive control of the blade at all times . . . and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method . . . not even hydraulic . . . gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curing compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6" reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

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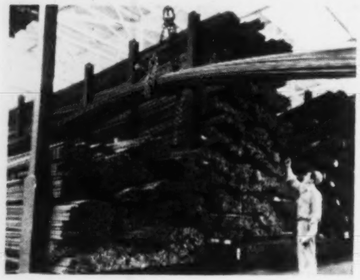
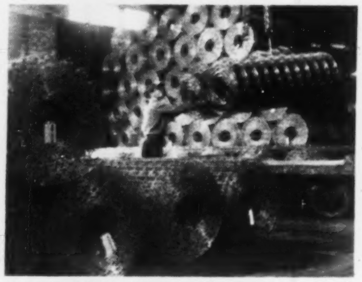
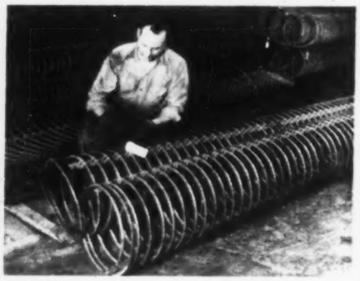
See your Ryerson Steels catalog for the complete list of products—and write for our Bulletin No. 70-2 on specialized reinforcing service for contractors.



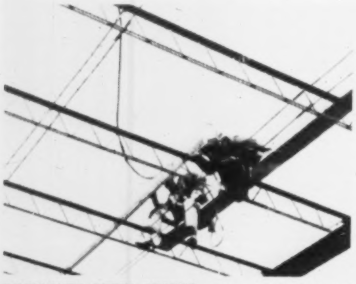
RE-BARS—New billet, deformed reinforcing bars in stock at 15 Ryerson plants. Designed for highest bonding power, bars conform to all building codes and to ASTM specs. A-15-52T and A-305-50T.



WIRE FABRIC—Electric-welded fabric of cold drawn wire in rolls available from stock in a wide range of standard gauges and spacings. Special gauges and spacings furnished to order.



SPIRALS, for column reinforcement—Made from hot rolled wire rod or cold drawn wire in ¼", ⅜", ½" and ⅝" diameters complete with channel spacers. Collapsible for shipment.



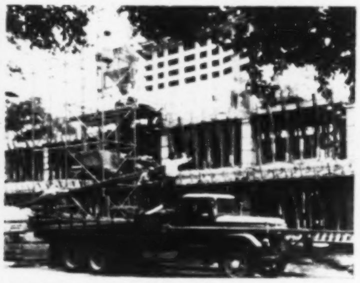
OPEN WEB STEEL JOISTS—All welded, designed for maximum strength, minimum weight in accord with Steel Joist Institute specifications. Available in 4' to 96' lengths, and 8" to 48" depths.

DETAILING—Expert Ryerson detailers can furnish complete setting diagrams and bending details that effect substantial reduction in re-bar placement costs.

FABRICATING SERVICE—Modern equipment and competent personnel to cut, bend, weld, thread or otherwise prepare any tonnage of construction steels are ready to work for you at Ryerson.

POSITIVE IDENTIFICATION—Permanent tags that cannot be defaced or torn off accurately identify every piece of Ryerson reinforcing steel—so correct placement on the job is quick and sure.

STEEL FORMS for concrete joist construction—Standard removable steel forms, slip or nail-down type, furnished in 20" or 30" widths. Special filler forms in widths of 10, 15, 20 and 30 inches.



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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

HOUSING STARTS UP 45%—Private housing starts increased more than seasonally last month. Begun during the month were 117,000 privately owned dwelling units, representing a seasonally adjusted annual rate of 1.39 million. When averaged for the first quarter, the annual rate amounted to 1.35 million units—a 45% increase over the first quarter of 1958.

COMMERCIAL BUILDING STAYS LIVELY—An estimated $702 million worth of commercial building projects were proposed during the first three months of this year—a sure sign that the fast first quarter pace of commercial building contracts will be continued in the second quarter.

CAUGHT WITH ITS BRIDGES DOWN—Buffalo, N. Y., which lost a $4-million lift bridge in a January storm (ENR Jan. 29, p. 24), is in trouble with another bridge. A 54-year-old, 100-ft-long bascule bridge was damaged late last month when concrete from a crumbling abutment fell into the counterweight pockets. The city decided to leave the bridge down so it could be used by traffic during lengthy repairs. Now owners of 10 Great Lakes ships bottled up in the City Ship Canal are threatening to sue the city.

GOVERNMENT COMPETITION—Thew Shovel Co. reports that government-surplus sales of Thew-Lorain machines in the U.S. during 1958 equalled 25% of the number of new machines sold by the company in the "same time and territory." Thew's net sales in 1958 were off 42% from 1957.

TUSCARORA MERRY-GO-ROUND—The Indians are flushed with victory and the New York State Power Authority is resigned to a smaller reservoir on nonreservation land; but the Niagara project may get to the Supreme Court anyway. The Federal Power Commission is unhappy about being ordered last November by the District of Columbia Appeals Court to consider Tuscarora objections in licensing the project. FPC has asked the lower court to stay its decision pending an appeal to the high court.

LOST ART?—It apparently takes Canadian knowhow to handle those rare U.S. railroad construction jobs. Mannix International, Inc., subsidiary of Mannix Co., Ltd., in Calgary, Alberta, says it has four new track maintenance jobs in the U. S. In 1958 it did work for 20 railroads in 18 states.

WRONG PRESCRIPTION?—Appointment of a physician to replace an engineer as director of the Interior Department's Office of Saline Water is a tough pill for the National Society of Professional Engineers to swallow. NSPE is protesting the naming of Dr. A. L. Miller to head a "clearly engineering program."

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WASHINGTON OBSERVER

- **U. S. will let states decide on Buy American**
- **Revenue bonds for Highway Trust Fund?**

- **It's still unofficial, but the federal government will let the states decide if they want to discriminate against foreign roadbuilding materials on highways built with U. S. Funds.** But the government will lay down the ground rules.

States that want to discriminate will be required to conform with the Buy American Act.

Generally, this law requires preference must be given to domestic materials unless they are priced 6% to 10% higher than foreign materials. The law has applied to 100% federal purchases since the 1920s.

The new ruling will mean about a dozen states that now have restrictions or outright bans on foreign materials must start using Buy American rules. States that don't bar the use of foreign materials won't have to make any changes.

Government officials have been arguing for some time about various state plans to put embargoes on important materials (ENR Feb. 19, p. 23). The problem is complicated because highway contracts are let by state highway commissions using state as well as federal funds to pay for the job.

—

- **The money to keep Interstate Highway construction on schedule may come from sale of revenue bonds by the Highway Trust Fund.** That tentative solution is finding favor during the first rounds of behind-the-scenes talks between Congressional leaders and top Treasury officials.

There are a lot of problems involved—and not all the answers are readily available.

The Administration maintains that if bonds are the answer, they must be sold on the market at the going interest rate. That is the method now being approved for the Tennessee Valley Authority. The idea is to keep the securities from becoming subject to the government debt ceiling, and to keep any interest payments on the bonds from being charged against the regular budget.

The Democrats want some sort of arrangement that would allow the trust fund to be charged only very low interest rates by selling its bonds to the Treasury at a specified figure. This is similar to the present practice, say, on Rural Electrification Administration loans. The agency borrows from the Treasury at 2%, as fixed by law, even though the Treasury has to borrow this money on the market at perhaps double this rate. The Administration is apt to be adamant on this, though; it's trying to get all government lending agencies to pay the Treasury what it costs the Treasury to borrow money in the money markets.

The negotiators want to come up with an agreement that can be presented as a package and pushed swiftly through Congress. With all the complications and controversy involved, a deal is bound to be some time off. In fact, there'll be some more talk about raising gasoline taxes, as the Administration asks. But some kind of bond issue arrangement seems fairly certain now.

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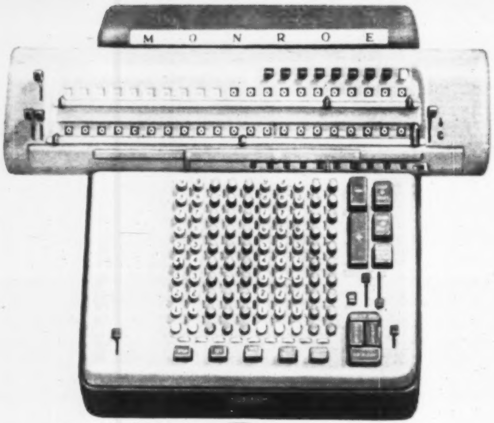

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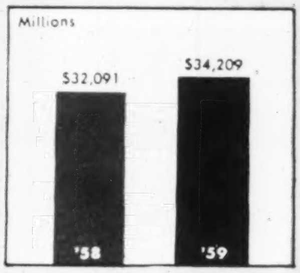
Capital Spending Outlook for '59



ALL BUSINESS	**+7%**
All Manufacturing	**+7%**
Petroleum Industry	**+11%**
Mining	**+4%**
Railroads	**+3%**
Other Transportation & Communications	**+8%**
Electric, Gas & Utilities	**+2%**
Commercial	**+7%**

Business Hikes Spending Plans

Capital spending by business should increase by 7% this year with another hike due in 1960, according to the 12th Annual Survey of Business Plans by McGraw-Hill's Department of Economics.

While this doesn't yet shape up as another industrial building boom of 1956-57 proportions, each successive check-up on business plans shows them closer to the pre-recession peak.

Only last fall, for example, the survey indicated a capital spending rise of only 0.5% in 1959. Now business is in a more expansive mood.

The boost in spending plans was tipped off by the sharp rise in industrial building contracts (ENR Jan. 15, p. 21). Industrial awards in the first three months of 1959 ran 32% ahead of the same period in 1958. Another advance indicator of the increase in business spending plans was the rise in ENR's figures for proposed industrial construction last fall.

The good news for construction in the new survey is dimmed somewhat by the fact that industry is planning to concentrate heavily on modernization, rather than expansion, during the next few years. A smaller share of spending, therefore, will go into new buildings.

In manufacturing companies for example, only 20.8% of total capital outlays will go for new buildings. Generally, 30% of manufacturers' capital spending goes for this purpose.

All business will use an average of 30.1% of the capital expenditures for new buildings. For specific industries it breaks down like this: mining, 10.9%; railroads, 40.4%; airlines, 6.9%; trucks, buses, shipping 11.1%; electric utilities, 5.1%; commercial, 68.0%.

On the plus side for construction are these factors:

- Some of the big modernization outlays projected for 1959-62 will undoubtedly be aimed at rehabilitating obsolete plant facilities as well as replacing old machines. Plans for modernization outlays in 1959 and 1960 are the largest industry has ever reported.
- If sales continue to rise as rapidly as manufacturers expect, many industries will soon have to think about building new plants.
- Commercial businesses, where construction accounts for the bulk of capital outlays, plan to spend more for new facilities both in 1959 and 1960 than in any previous year except 1956.

The survey presents a picture of strong capital spending prospects over the next four years. Some of the information reported indicates that it could become even stronger.

Industry held firm on its plans to increase its research outlays last year, despite the impact of a severe recession on sales and profits. Expenditures for research by business rose 12% in 1958, and large increases are planned again for 1959 and the years ahead. This assures a continuing flow of new products and new processes and a need for new plants to take advantage of them.

Industry will be in an increasingly better financial position to support heavy outlays for plants and equipment. Depreciation deductions—now the major source of funds for plant and equipment expenditures—will rise sharply, from $21 billion in 1958 to $26 billion in 1962. In the past, most companies have usually spent all their depreciation allowances on new investment.

Companies say they would spend even more on plants and equipment if the tax law permitted them to take larger deductions for depreciation.

Nearly every manufacturing industry anticipates larger increases in sales than in capacity over the next four years. For manufacturing as a whole, the expected rise in sales between 1958 and 1962 is almost twice as great as the planned increase in capacity. If this sales gain is realized, it would mean a rise in operating rates, a drop in unused capacity and, in some industries, a need for new expansion programs.

Here are some of the key figures on business spending plans:

- Business as a whole now plans to spend $34 billion on new plants and equipment in 1959, an increase of $2 billion over last year. Advance plans call for spending $34 billion also in 1960 and $33 billion in both 1961 and 1962.
- Manufacturing industries now plan to spend between $10.3 and $10.5 billion in each of the four years 1959-62. The biggest single industry in spending will be chemicals, where present plans indicate a steady rise from $1.32 billion in 1958 to $1.63 billion in 1962. Also in the billion-dollar class for all or most of these years will be the steel and machinery industries.
- Electric and gas utilities expect to spend $6.2 billion in 1959—only a few million dollars less than their 1957 peak—and close to $6 billion in the years 1960-62.
- Commercial companies in the survey plan to spend more in 1959 and 1960 than in any previous year except 1956—$7.5 billion this year and $7.6 billion in 1960.

(*Turn the page*)

Capital Spending Plans by Industry

Millions of Dollars

	1958	1959	1958-1959		Preliminary Plans	
	Actual	Planned	% Change	1960	1961	1962
Manufacturing	**$9,761**	**$10,472**	**+ 7%**	**$10,448**	**$10,265**	**$10,444**
Iron & Steel	1,217	1,180	− 3	1,274	1,032	1,032
Nonferrous Metals	510	428	−16	368	383	394
Machinery	915	986	+ 8	1,036	1,044	1,068
Electrical Machinery	459	532	+16	591	532	532
Autos, Trucks & Parts	558	709	+27	730	679	740
Transportation Equipment (Aircraft, Ships, R.R. eq'pt.)	370	440	+19	343	326	326
Other Metalworking	723	875	+21	941	908	838
Chemicals	1,320	1,386	+ 5	1,441	1,542	1,635
Paper & Pulp	578	636	+10	617	611	587
Rubber	134	165	+23	188	203	223
Stone, Clay & Glass	399	498	+25	469	478	486
Petroleum Refining*	665	698	+ 5	670	750	765
Food & Beverages	742	783	+ 6	719	702	692
Textiles	288	321	+11	324	326	342
Miscellaneous Manufacturing	883	835	− 5	737	749	784
Nonmanufacturing	**22,330**	**23,737**	**+ 6**	**23,815**	**22,618**	**22,389**
Petroleum Industry*	4,819	5,338	+11	5,363	5,441	5,609
Mining	394	409	+ 4	342	286	271
Railroads	754	777	+ 3	816	800	864
Other Transportation & Communications	3,899	4,195	+ 8	4,381	4,346	4,363
Electric & Gas Utilities	6,088	6,182	+ 2	5,974	5,723	5,952
Commercial	7,041	7,534	+ 7	7,609	6,772	6,095
ALL BUSINESS	**32,091**	**34,209**	**+ 7**	**34,263**	**32,883**	**32,883**

** Petroleum refining, included under both manufacturing and petroleum industry, counted only in manufacturing total*

DATA: McGraw-Hill Department of Economics, U. S. Department of Commerce and Securities & Exchange Commission

- Companies in other nonmanufacturing industries also expect a rising rate of capital expenditures over the next four years—specifically, petroleum, railroads, other transportation and communications.

Survey figures indicate that research facilities will account for 5% of total outlays for new plants and equipment this year—or $523 million.

This means that research and development, as an "industry," is a bigger market for plant and equipment than the textiles and rubber industries combined, and almost as big as electrical machinery.

By geographical region, the biggest share of industrial outlays for plants and equipment will go to the North Central states (Great Lakes and Midwest farm states), which will get 34% of the total. The Middle Atlantic states, with 20%, will gain slightly over their 1958 share. The same is true of the West, which will get 13%. The South Atlantic states can expect 14% in 1959, as in 1958. New England and the South will account for slightly smaller shares of the total than in 1958.

The McGraw-Hill Survey was conducted in March and reflects current business thinking on capital expenditures. It is a report of actual plans, not a forecast.

Reclamation Commissioner Will Retire

Floyd E. Dominy, an agricultural expert, will replace Wilbur A. Dexheimer as Commissioner of the Bureau of Reclamation on May 1. Mr. Dexheimer is retiring after 30 years of service.

During Mr. Dexheimer's six years as commissioner, the role of the Reclamation Bureau has expanded greatly. Appropriations during that period have totaled almost $1.2 billion—about one-third of all money appropriated for reclamation since the program was started 57 years ago.

The scope of bureau's activities has also widened. It now has responsibility for administration and engineering supervision of the new federal loan program for local reclamation projects.

Mr. Dominy has served 13 years with the bureau, the last year as associate commissioner. The appointment of Mr. Dominy as head of the bureau has stirred some criticism about his lack of engineering background. But even his critics admit he has shown great ability as an administrator, a spokesman for reclamation development and as a salesman before Congressional committees.

Why Concrete Won

FAA explains rejection of asphalt for Chantilly

Engineering reasons for specifying portland cement concrete exclusively for the runways, taxiways and holding pads of Washington, D. C.'s new jet-age International Airport were revealed last week by the Federal Aviation Agency.

Asphalt interests had protested the decision of FAA and its consulting engineers to limit bidding to portland cement concrete for paved areas to be used by aircraft.

Three runways now are under construction at the Chantilly, Va., airport site (ENR April 9, p. 23).

FAA released the pavement report of the consulting engineers, with asphalt correspondence that preceded and followed the runway contract award of December 19.

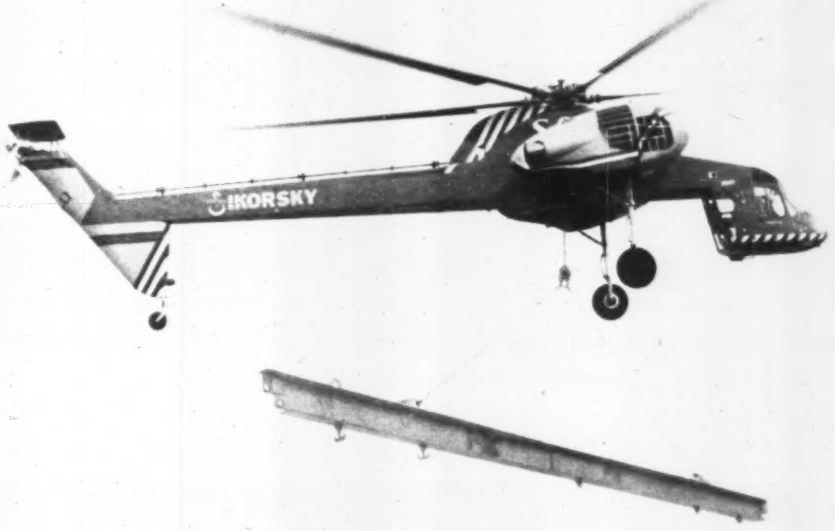
The engineering analysis that led to the choice of concrete by the consultants concluded with the statement that "with the exception of just cost, portland cement concrete is superior to asphaltic concrete in almost every respect."

Ammann & Whitney, prime consultants in the four-firm architect-engineer team that designed Chantilly, balanced concrete against asphalt on nine counts. Their evaluation favored rigid pavement on each point. Here are the criteria used in judging:

- Minimum acceptable life of 25 years.
- Positive resistance to jet fuel spillage and jet engine blast.
- Elimination of rutting of the pavement due to channelized traffic.
- Prevention of "shoving" as a result of high-speed turns.
- Satisfactory performance under extremely high tire pressures.
- Light-reflecting quality of the pavement.
- Adaptability of pavement to accommodate probable characteristics of future aircraft.
- Skid resistance.
- Only nominal maintenance required.

Use of concrete for jet traffic at Chantilly will influence designers elsewhere in selecting pavement for the high-speed jet-powered planes, asphalt people assert.

Industry spokesmen in the Asphalt Institute and the National Bituminous Concrete Association had protested the Chantilly decision both before and after the runway award was made. They had assumed that competitive bids for both types of pavement would be invited. The use of asphalt would save $5.6 million, they claimed.



Sikorsky's Flying Crane Arrives

The Sikorsky S-60 crane helicopter was unveiled this week. The aircraft is designed entirely for hoisting and hauling and can carry a six-ton payload.

The S-60 is basically a skyhook. Instead of the conventional cargo or passenger cabin, its fuselage consists of a narrow, bridge-like boom that extends from cockpit to tail rotor. Loads are carried externally from a hook attached to the boom (picture).

The S-60 should be useful for construction work in rugged terrain where roads do not exist and would be expensive to build, say Sikorsky engineers. They predict its use won't be restricted to remote areas. It could also be used in city locations where it's too crowded or too expensive to use conventional hoisting equipment.

The flying crane will be on the market in about 15 months and will sell for about $600,000, Sikorsky officials say. The company expects to make most of its industrial sales to firms that will rent the S-60s. **Rental cost will be $400 to $500 an hour** and will probably drop as the machines are improved, say officials.

Helicopters aren't new to the construction industry. But in the past they were designed to carry passengers or internal cargo. This often resulted in difficulties when payloads were carried outside on an attached hook. The copters weren't built for it and pilots had too little control over the cargo.

A glass-inclosed cockpit hangs below the S-60's boom, permitting unobstructed vision in all directions. The pilot's seat swivels 180 deg to the rear. Flight controls are in the front and the rear positions. With the copilot momentarily at the controls, the pilot can swing around to operate the hoist and the ship simultaneously.

Two 2,100-hp piston engines drive the five 36-ft rotor blades. A winch, installed directly under the rotor, is hydraulically powered by the same engines.

During a demonstration the S-60 lifted a two-ton utility pole and placed it in a pre-dug hole. Next, the flying crane transported a 60-ft, 4,500-lb, Corps of Engineers bridge element and placed it on foundations.

The winch has a hoist rate of 2 fps and a 100-ft cable. The pilot operates the winch and hook from the cockpit. His cyclic control stick has up-down-stop controls for the winch. He can release the hook at will or set it on a no-load release.

Sikorsky engineers designed the winch and hook because a unit combining the compactness, capacity and light weight they needed was not available on the market.

A helicopter does not lurch upward when it releases a heavy load. The pilot can reduce the pitch of the rotor blades to compensate for the sudden reduction in weight.

The S-60 measures 65 ft from nose to tail and 17 ft high. The fuselage at the winch location is 7 ft 8 in. from the ground.

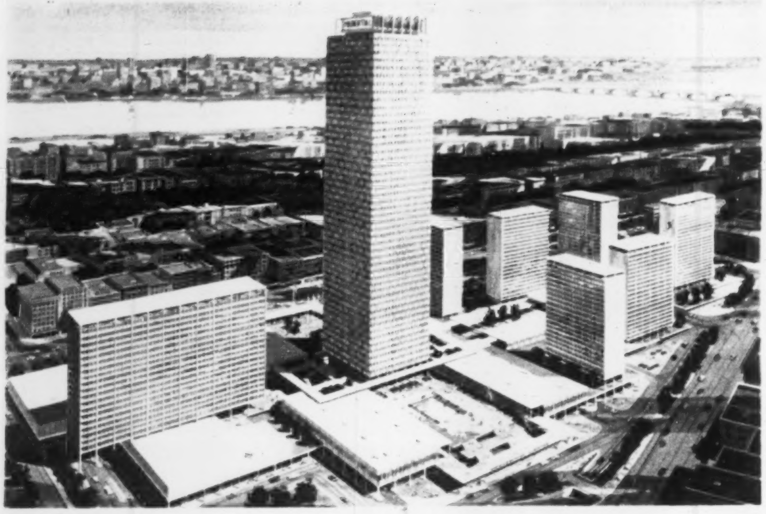
The six-ton capacity of the Sikorsky flying crane will be increased to 8½ tons in later models. Replacement of the two piston engines by lighter gas turbine units will permit the greater payload.

A series of models capable of carrying loads as great as 50 tons is now in the design stage.

An earlier Sikorsky model, the S-58, last year planted 63 utility poles in two days on the almost inaccessible slopes of California's Santa Ynez Mountain. The cost of the job averaged about $70 per pole.

Using more conventional methods, the project would have taken 65 days and cost some $250 per pole. Construction by helicopter enables power companies to buy cheap right-of-way distant from highways.

Southern California Edison Co. hired a helicopter for construction of steel transmission towers in a remote, hilly area. Concrete for the footings was carried to the tower sites by the aircraft in standard ½-yd buckets. When the footings were completed, the helicopter brought in fabricated tower sections for on-the-spot assembly.



Big Boston Project Under Way

Construction will start before the end of this month on the 31-acre Prudential Center in Boston (ENR Feb. 14, 1957). Its 52-story Prudential Tower will be New England's tallest building.

The first construction contract, awarded to the George A. Fuller Co., calls for excavation and foundation work in the center third of the Back Bay area plot. This part of the project, involving over $6 million, will include foundations for the Tower Building, a bank building and three other commercial buildings.

The next contract, which Prudential expects to award in the fall, will cover construction of the tower, bank and commercial buildings. Later contracts will go for a hotel and apartment buildings. The entire Center will cost over $100 million.

Land for the development includes the former Back Bay freight yards of the Boston & Albany Railroad, plus the site of the old Mechanics Building and a parcel of land bought from the First Church of Christ Scientists (ENR Jan. 31, 1957). Prudential paid over $5 million for the real estate alone.

The site, all on filled land, will present quite a foundation problem to the builders. They will have to maintain the area's high groundwater level. most of Back Bay's buildings rest on countless wood piles, which will rot if the water table drops for any length of time.

First step will be the isolation of the construction site from the rest of the plot. A steel cofferdam will be driven far enough to seal off water seepage and allow excavation without interfering with the surrounding ground-water level.

After preliminary excavation inside the tower plot, 30-in.-dia. steel pipe caissons will be driven into the ground to support the building.

These caissons, driven to rock, will extend about 140 ft below the present grade. A core of rock, 12 to 25 ft deep, will be drilled from below each caisson, and a heavy steel grillage, cased in concrete, will be set as a bell-bottom below the caisson ends. The tower building itself will sit on about 150 of these concrete-filled caissons.

A 10-ft-thick concrete cap, slightly larger in area than the base of the 26,000-sq ft tower building, will go on top of the caissons. Surrounding the caissons-cap and covering the entire center section of the project will be a reinforced concrete mat foundation slab. Columns for the low buildings and plaza will rest directly on this reinforced concrete mat.

Steel for the Tower superstructure, totaling more than 26,000 tons, is now on order from American Bridge Co. Tower erection should start early next year.

Two easements will cut through the project below the plaza level. One is for the main tracks of the Boston & Albany Railroad. The Massachusetts Turnpike Authority will hold the second easement for a possible extension of the turnpike to the downtown area.

Charles Luckman Associates of New York City and Los Angeles are the coordinating architects for the development project. Hoyle, Doran & Berry of Boston are associate architects for design of the project. Structural engineers are Edward & Hjorth; Syska & Hennessy are the mechanical engineers. Both are New York City firms. Metcalf & Eddy of Boston are the foundation engineers.

US Clamps Down

Acts against Sioux City under 1956 pollution law

The federal government issued its first enforcement order under the 1956 pollution-control act last week. The Department of Health, Education and Welfare ordered Sioux City, Iowa, and ten meat-processing plants in the city to stop discharging pollutants into the Missouri River by March 1, 1963.

Department Secretary Arthur S. Flemming attached a timetable of remedial construction to the order. It sets step-by-step dates that the polluters are required to meet. If they fail to make specified progress by any of the five dates, Mr. Flemming will refer the case to the Justice Department for court action.

The 1956 law also authorized federal grants to local governments for construction of sewage disposal and treatment facilities.

Sioux City Mayor Wallace W. Wilson says, "I'm not convinced the government can come in and tell a town to go $7 million in debt. We would have to mortgage the town to the hilt."

Mr. Wilson said estimates four years ago showed the work would cost $7.5 million. The city would pay $6 million, the packers the rest.

Water control agencies of Iowa, Nebraska, South Dakota, Kansas and Missouri got together with PHS at Sioux City last July. The conferees agreed that pollution at all eight towns should cease.

Seven of the communities accepted the conference judgment and are now making progress toward sewage abatement. But Sioux City refused to move—it even passed a city government resolution to that effect.

In the face of this defiance, Secretary Flemming appointed an eight-man board to hold a public hearing—the next step required by law.

Last month, the board made formal recommendations for joint efforts by the city and the ten firms to collect and treat all sewage through a municipal system.

Abatement of pollution is to be achieved in accord with a five-stage time schedule.

If the offenders fail to show required progress at each stage, Secretary Flemming will give the case to the Attorney General to bring suit. For this first case, however, HEW will wait six months before asking justice to go to court.

The Sioux City case has gone farthest along the enforcement road of 11 pollution cases so far acted upon by PHS under the 1956 act.

New Group Aims at the Big Problems

The fragmented construction industry passed a new milestone in labor-management cooperation last week.

Representatives of more than a dozen contractor associations and the 18 building trades unions got together long enough to form a top-level national alliance to promote common aims. The action implemented a tentative agreement mapped out at Miami Beach in January (ENR Feb. 5, p. 86).

The same associations and unions have been working together for almost a decade on the National Joint Board for the Settlement of Jurisdictional Disputes.

Now they're going to tackle a much wider variety of industry problems. Specific areas of discussion have not been made public, but the emphasis seems to be on factors outside the contracting industry that affect the welfare of both the unions and the contractors.

One high-priority objective is to strengthen construction's position in the battle with industrial unions for construction work in big industrial plants. Already, industry representatives are considering an all-out campaign to convince top industrial management to steer more of this work to contractors instead of having it performed by their own industrial employees.

One official close to the negotiations says such a campaign may be a turning point in industry policy.

"It shows that the industry is coming out from its protected position behind regulations, building codes, etc. and moving to sell its services openly under the impact of the new competition."

Here are organizational steps taken last week:

- Formation of a Construction Industry Joint Conference made up of representatives of national contractor groups and the 18 presidents of the building trades unions to act as a general policy board.
- Formation of a Joint Administrative Committee, made up of eight representatives each from contractors and labor, to actually study and define general problems and devise specific programs to deal with them.

Serving as co-chairmen at the meeting of the joint conference last week were Maurice Hutcheson of the carpenters union and Frank J. Rooney, former president of the Associated General Contractors of America and now head of AGC's labor committee.

John T. Dunlop, Harvard University economics professor and one-time head of the industry's jurisdiction disputes board, was named impartial chairman of the administrative committee.

Officials of the Associated General Contractors and other groups were close-mouthed about what transpired during the week. But it was understood a number of contracting groups are joining the new organization with reluctance.

There are indications that the painting, masonry, latherers and plastering contractors are "looking out the window" because they aren't as deeply involved in industrial construction.

Reported most enthusiastic are AGC, most of the unions, the National Association of Electrical Contractors, the Mechanical Contractors Association and the Sheet Metal and Air Conditioning Contractors.

Mr. Dunlop hopes to get general acceptance on a few of the most pressing problems and to begin action by fall.

Among the problems, Mr. Dunlop said, is the "tremendous" need for upgrading skills of construction workers to meet new demands. The joint conference will be looking at ways to strengthen the apprenticeship system and to attract new workers into construction.

The group also will look into the need for over-all national direction to deal with problems in localities, such as work stoppages, caused by poor cooperation between contractors and unions.

One of the professed aims of the joint conference is to seek "improved performance and productivity by contractors and by workers." This might include eventually going into such touchy questions as work rules, travel time and the manning of jobs.

But the group's first task remains the fight for a larger share of industrial construction. It's estimated that millions of dollars in such work is lost by the construction industry each year—with prospects that increasingly more will get away in the years to come unless something is done.

Reason for this concern was spelled out this week in a report on the findings of a two-year study on construction work in industrial plants. In all, 74 companies were studied, 60 of them industrial companies and 14 electric utilities.

The study found that some 40% of the companies studied had recently entered into contracts with industrial unions specifically granting these unions the right to a part of the construction work within company plants.

A number of construction people express the fear that this trend will grow with the adoption of automation and labor-saving devices in industrial plants. They see industrial unions as trying to hold their membership by taking on more company services, especially construction work.

One official of a contracting organization explains, "We're heading for a monumental clash with industrial unions unless we get concerted action to deal with this problem."

The new study found that on major construction work, 80% of the firms contracted out all their work. But on minor projects, less than half did so.

For modernization work more than half of the plants contracted less than 25% of the work. For non-routine maintenance, a majority contracted out less than 25%. For routine maintenance, 62% contracted nothing and an additional 28% less than a quarter of it.

Results of the study indicate the need, according to some contractors, for an advertising campaign to reach top industrial management.

Around the Country . . .

- **Second Plowshare meeting**—The AEC will conduct the Second Annual Plowshare Symposium in San Francisco on May 13-15. The meeting, run by AEC with the Lawrence Radiation Laboratory of the University of California, will study peaceful applications of atomic energy, including civil engineering applications.

- **Delayed arterial**—Work on the long-awaited riverfront arterial highway in Albany, N. Y. won't get started until 1960. Design of the $19.5-million expressway has just begun.

- **What's to blame?**—It looks like it'll be an argument of "poor design" vs contractor negligence in the sinking of those pontoons for the Hood Canal Bridge in Washington (ENR Jan. 8, p. 25). Both the contractor and state have called in experts.

- **Utah dam**—Morrison-Knudsen Co., Inc., Boise, is apparent low bidder for Stanaker earthfill dam near Vernal, Utah. Its $1.6-million bid was 30% under the Bureau of Reclamation estimate. The 1,900-ft-long, 140-ft-high dam is the first participating unit in central Utah of the Upper Colorado River Project.

A-Power Moves Ahead on Two Fronts

Atomic power prospects are brighter this week as a result of two new advances:

- Studies just completed on three types of reactors show big-scale atomic power can be produced competitively in high-cost areas of the U.S.
- Researchers have converted atomic reactor heat directly into electricity by use of a thermocouple.

The new reactor studies show that three types in the 240,000-300,000-kw range can produce power for eight to nine mills per kilowatt-hour. By contrast, the atomic power plant at Shippingport, Pa., reports a cost of about 60 mills.

The studies were conducted for the Atomic Energy Commission under mandate from the Joint Congressional Committee on Atomic Energy. AEC officials are giving the committee their reactions to the studies this week.

AEC sources report these other conclusions of the investigating firms:

- **Boiling water.** Ebasco and General Electric say the optimum-size boiling-water reactor would be 300,000 kw because of limitations on the size of available turbines.
- **Pressurized water.** Stone & Webster and Combustion Engineering report the most efficient size for this concept would be 236,000 kw, with the ceiling imposed by available size of both the turbine and the pressure vessel.
- **Organic cooled.** The Bechtel Corp. and Atomics International concluded that the best reactor for this concept would be 300,000 kw.

Estimated cost per installed kw reportedly ranged from $150 to $250. Comparable cost for conventional fuel steam-electric plants is roughly $150.

The initial reaction at the commission was that the competing designs are "so close it is hard to say one is better than the other."

It has long been recognized that the chances of achieving competitive nuclear power are better as the size of the reactor is increased.

However, AEC Chairman John A. McCone wants to limit the size of AEC-supported plants to 80,000 kw or less, leaving construction of the big, commercial-size plants to private industry.

Sen. Clinton Anderson (D., N.M.), chairman of the Joint Committee, differs. He wants to subsidize construction of the big plants, too, since there's considerable doubt that private utilities will invest heavily until the design studies are proved out.

In Los Alamos, N. M., scientists last week unveiled a radically different thermocouple device. For the first time, it converts nuclear energy to electricity without turbines.

The small experimental device, about the size of a flashlight battery, lit a 25-watt bulb for 12 hours. Although its most immediate promise is for use in rockets and satellites where compactness is more important than efficiency, there is already considerable speculation over what the ultimate impact will be on power generation technology.

The thermocouple principle—that electricity is produced when the junction of two unlike metals is heated—is well known. However, the new device—called a plasma thermocouple—is radically different in that one of the metals is uranium-235 and the other is cesium in gaseous form.

When the device is lowered into a reactor, the uranium heats to some 3,500F. Electricity flows from the uranium through the gasified cesium.

In an ordinary reactor the heat generates steam, which then drives turbogenerators just as in a conventional coal-fired power plant.

Dr. George Grover, who headed the development group, said the plasma thermocouple could realize thermal efficiencies in the neighborhood of 30%. This compares with 40-42% in the newest coal-fired power plants, and less than 10% in previous thermocouple devices.

However, the AEC in Washington warned against overoptimism, cautioning that the plasma device is "clearly in a very early experimental phase. . . ."

What Causes Highway Accidents?

The U. S. Bureau of Public Roads has presented Congress with a 232-page highway safety study that gets to the heart of what causes the bulk of the thousands of daily highway accidents.

One of the most extensive highway safety studies ever made, the report blasts with equal force the accident-contributing role of poor highways, vehicles and drivers. Here are some of the findings:

One of the weakest links in the nation's road system from a safety viewpoint is the more than 500,000 miles of rural roads.

Nearly 30% of these roads have pavements less than 20 ft. wide. This is at least 4 ft narrower than today's standards.

Such a road carrying a volume of only 1,000 vehicles a day has an average of 60 potential accidents a day from drivers encroaching on the oncoming traffic lane.

Another prime source of accidents is skidding.

On rural roads in Virginia during 1957, skidding accounted for 41% of all accidents. The same factor played a major role in 22% of all accidents on the Pennsylvania Turnpike during a recent two-year period.

Many highways are safe when dry, but turn skid-dangerous after even light showers. Oil drippings on heavily traveled roads also increase skid danger.

The bureau recommends resurfacing with non-skid material. This can be done at modest cost and during routine maintenance operations.

Eliminating traffic bottlenecks can cut accidents and step up traffic flow at the same time, the bureau claims.

A four-mile urban arterial street in Cincinnati, for example, was carrying close to 30,000 vehicles a day. A new signal system and pavement markings cut the accident rate by 10% and speeded up traffic by 7%.

A well-planned one-way system also speeds up traffic and cuts accidents. In Portland, travel speeds were almost doubled and accidents cut in half when a downtown grid of streets was converted to one-way traffic.

Banning curb parking in some urban areas has cut accidents by 16%, the bureau found. Even substituting curb for angle parking can cut accidents by 50% in other areas.

The older cars and trucks are the most accident prone. But modern automobiles with their futuristic designs are rapped sharply by the safety study.

"The projectile-like components of the bumper guards of some cars are largely non-functional and present needless hazards to pedestrians, as do some other embellishments including projecting hood or fender ornaments," the report states.

Making cars lower—though it improves stability and riding quality on curves—reduces sight distances.

The BPR study was authorized by Congress when it voted the Interstate Highway Program back in 1956. It's now up to Congress to decide what action—if any—the federal government should take for highway safety.

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TODAY'S FINEST ROADS ARE PAVED WITH ASPHALT

Produced by Esso Standard Oil Company

The Maine Turnpike is another example of how Asphalt supplied by Esso helped build a better road at lower costs. The Maine Turnpike Authority saved more than $21,000 per mile over equivalent slab type construction. Compare these advantages:

- *Unsurpassed quality* — Asphalt produced by Esso is specially refined from selected crudes to provide maximum pavement strength to resist heavy axle loads and the effects of severe frost.
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- *Winter weather resistance* — Asphalt seals out moisture and is unharmed by de-icing salts. Snow and ice naturally melt away faster, too.
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Can Asphalt supplied by Esso help you build a better road at a lower price . . . with lower maintenance costs? For more information, or technical assistance in your road building plans, write: Asphalt Products, Esso Standard Oil Company, 15 West 51st Street, New York 19, New York.

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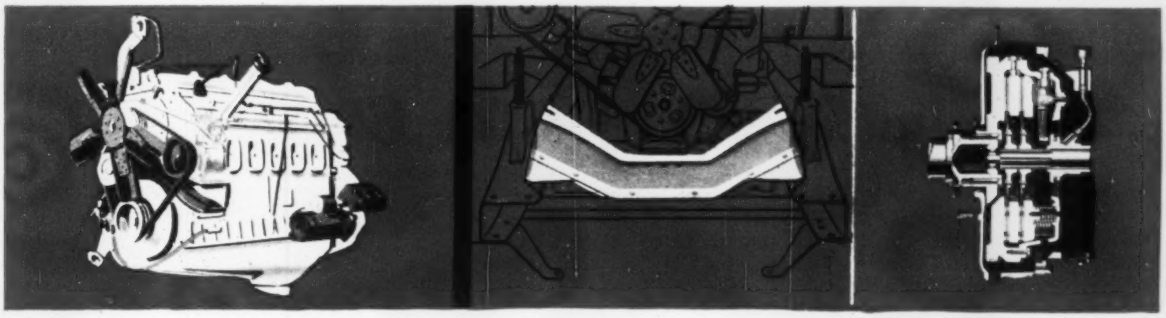
brings you the greatest money-saving, money-making construction trucks ever built!

Operation "High Gear" is the biggest engineering, design and quality-control program ever known! It's an entirely new concept in modern truck transportation, backed by the keenest brains and manufacturing know-how in the business! Results: New truck values, new dependable endurance, new low operating and upkeep costs. See your GMC Dealer for proof, today. GMC Truck & Coach—a General Motors Division.



NEW! LASTING LOW-COST POWER

Now you can get the most economical diesel in any construction truck—the new GMC 6-71SE two-cycle power plant. This fuel-saving champ has exclusive economy range governor and automatically controlled fan. Available with 189 or 210 H.P. Other GMC engines include economical, powerful V-8's and Sixes.

NEW! TRUE-TRUCK FEATURES

For the rough, tough usage of construction trucks, GMC has installed strongest front crossmembers, new extra-heavy-duty clutches, bigger brakes and stronger prop shafts. In many models you also get these GMC Extra-Value features at no extra cost—M-400 bearings that last seven times longer, standard synchromesh transmissions and the easiest mechanical steering, recirculating ball-type.

◀ NEW! SPECIALIZED CONSTRUCTION MODELS

Any size, any shape! Conventional and COE design, world's biggest selection of six-wheelers, complete line of pickups including new Wide-Side and 4 x 4 models, new FW550 six-wheelers with 46,000 lbs. GVW designed specifically for 6-7 yard mixers and 10-cubic yard dumps even in states with 32,000-lbs. axle laws, plus 13 special off-highway models with up to 63,000 lbs. GVW.

Watch for more great truck advances from GMC!

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From ½-ton to 45-ton . . .
General Motors leads the way!

Researchers Report Gains in Sealants . . .

Researchers came to the 8th annual meeting of the Building Research Institute in Pittsburgh last week with a crystal ball in one hand and a pile of data in the other. They used both to good advantage.

The specific problems taken up in the technical sessions concerned sealants for curtain walls, design and installation of windows and mechanical fasteners.

Use of metal curtain walls as a means of enclosing a building has grown explosively since 1950, said Jack M. Roehm, director of research and development, Kawneer Co., Niles, Mich. But the advance in the technology of holding metal and glass together in these walls is even more sensational.

Because of the newness of the field, specification of sealants has left much to be desired. Now, Mr. Roehm reported, the situation is being corrected. The Metal Curtain Wall Division of the National Association of Architectural Metal Manufacturers is preparing a manual with a section on general specifications and performance standards for curtain walls. The manual may be available this summer.

Three new developments affecting use of neoprene sealants were reported by R. H. Barton, Elastomer Chemicals Department, E. I. duPont de Nemours & Co., Wilmington. One is the availability of a specification useful both to manufacturer and designer. Second is introduction of a new polymer that makes possible closer extrusion tolerance and better surface appearance than attained heretofore with neoprene, a synthetic rubber. And the third is growing use of a cellular neoprene strip.

Advantages and disadvantages of silicone as a sealant were summarized by H. M. Johnson, product manager for rubber, Silicones Division, Union Carbide Corp., New York City. The biggest disadvantage of these inorganic materials is relatively high cost. Designers must determine whether the high temperature properties of silicone compounds are worth paying for.

Progress also has been made with polysulfide sealants, reported George J. Schulte, product manager, Adhesives, Coatings and Sealers Division, Minnesota Mining and Manufacturing Co., St. Paul, Minn.

The two-part polysulfides, useful in a wide variety of situations, now are available in various colors. Strength is reduced slightly with most colors, but only when very large movements are expected is it necessary to restrict the color to black, Mr. Schulte said.

Polyurethane sealants have many desirable properties but they must be used with a primer, said John W. Winkler, vice president, Coast Pro-Seal and Manufacturing Co., Los Angeles, Calif. Also, to avoid foaming, they must be protected against moisture until they are cured. The curing system is relatively toxic.

Polybutene and polyisobutylene are satisfactory in many sealing applications and do a good job when properly used, contended Paul S. Sussenbach, Presstite Division, American-Marietta Co., St. Louis. However, some joints require two or more types of sealing compounds, or one that combines in a single sealant two or more products, each of which alone provides a degree of weathertightness.

"The statement has been made," Mr. Sussenbach said, "that buildings literally dance. These sealing materials of which we have been talking are required to seal and bridge the gaps or joints between dancing members. The buildings of today have seven-league boots in comparison with the buildings erected a few years ago!"

In the opening session, Charles H. Topping, BRI president, announced that the institute now had 485 members; 360 are organizations and firms.

He also reported that the BRI board of governors had elected new officers: The new president will be Harold L. Humes, vice president, Baldwin-Hill Co., New York City, and the new vice president is Robert W. Cutler, partner, Skidmore, Owings & Merrill, New York City. Milton C. Coon, Jr., was named executive director.

. . . Predict New Roles for Glass, Plastics

Spectacular changes in building construction, especially in the residential field, were predicted by several BRI researchers.

In the 1970s: "You will be able to design and sell buildings whose windows will automatically become a darker color as the sun shines brighter on them, thereby regulating to a relatively fixed level the intensity of transmitted light," prophesied James E. Archer, director of research, Pittsburgh Plate Glass Co., Pittsburgh, Pa.

"These windows will be of several varieties . . . can be changed by the occupant to have any characteristic he wants. By the flick of a switch the windows can be made opaque," Mr. Archer continued. "Not only will it be possible to control light transparency, but in the same composite window, wall or partition of your buildings, the same glass structure can be energized to emit cool light and produce heat.

"Windows and other glass panels will, in addition, be available to control the passage of air, making it possible to cool or ventilate rooms without drafts. The structures will pass air through micro-openings, and the porosity of these glass materials will be changeable, permitting control of the flow of cool or warm air."

All-electric homes—heated in winter, cooled in summer and lighted all year by strategically placed "solid-state" devices—were visualized by S. W. Herwald, vice president for research, Westinghouse Electric Corp.

An electric current flowing through the proper combination of materials causes the junction between them to get hot, Mr. Herwald pointed out. Reversing the current cools off the joint. This principle can be used to pump heat into or out of a room, or for cooking or refrigeration.

Light can be produced by glowing phosphors that are directly energized by an electric current, Mr. Herwald continued. They can be used to form electroluminescent lamps, thin, flat sheets about the thickness of window glass. Brightness can be controlled by the twist of one dial, color by another.

"The latest advance," he concluded, "is to combine in a single operating unit all the advantages of both thermoelectricity and electroluminescence . . . One can visualize the day when the homeowner may air condition his home and light it in a color and brightness to suit its decor, all by panels built into its walls and all under precise control from a single dial."

L. C. Hicks, director of research and development, Allegheny Ludlum Steel Corp., Breckenridge, Pa., projected present laboratory developments in metals into the future: Exterior walls could become loadbearing members. They could be built on the "stressed-skin" principle, taking advantage of the high tensile strength of sheet materials.

"Houses with lightweight, movable plastic panels that will insulate against heat and deaden sound were predicted by P. W. Bachman, vice president of research and development, Koppers Co., Inc., Pittsburgh. He also foresaw widespread use of plastic pipe for sewerage.

Where buildings are business assets or public works… the better value is

REYNOLDS ALUMINUM

PIER 2 BROOKLYN PORT AUTHORITY PIERS

Port of New York Authority, Pier 2, Brooklyn, N. Y.

More than 300,000 square feet of Reynolds Aluminum Ribbed Siding and Corrugated Roofing was specified for this structure, combining low first cost with economical, easy-to-maintain service through the years. Top appearance was achieved by use of Reynolds Aluminum Ribbed Siding with a blue baked-enamel finish on front and back facades.

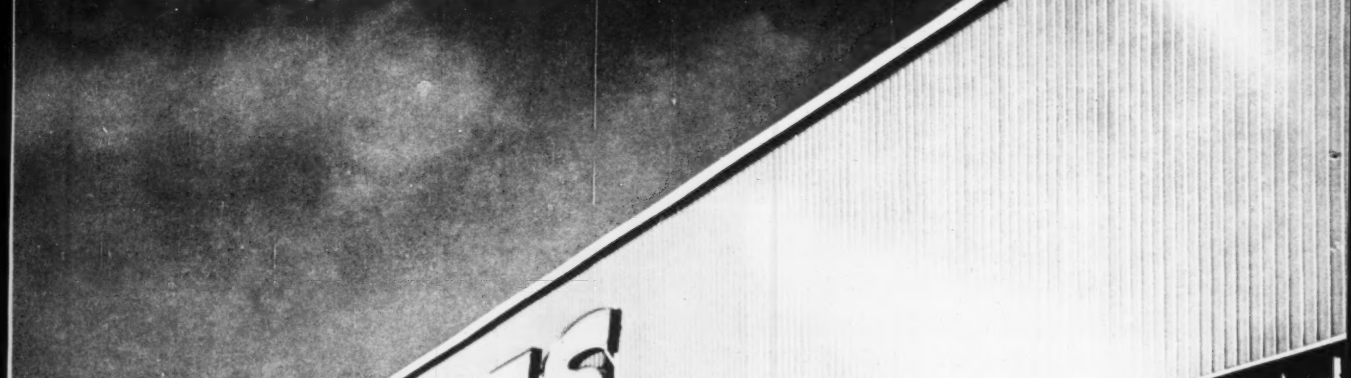
Designing Engineers
PONYA Staff

General Contractor
Rand Construction Co.
New York, N. Y.

Roofing and Siding Erector
A. Suna & Co., Inc.
Long Island City, N. Y.

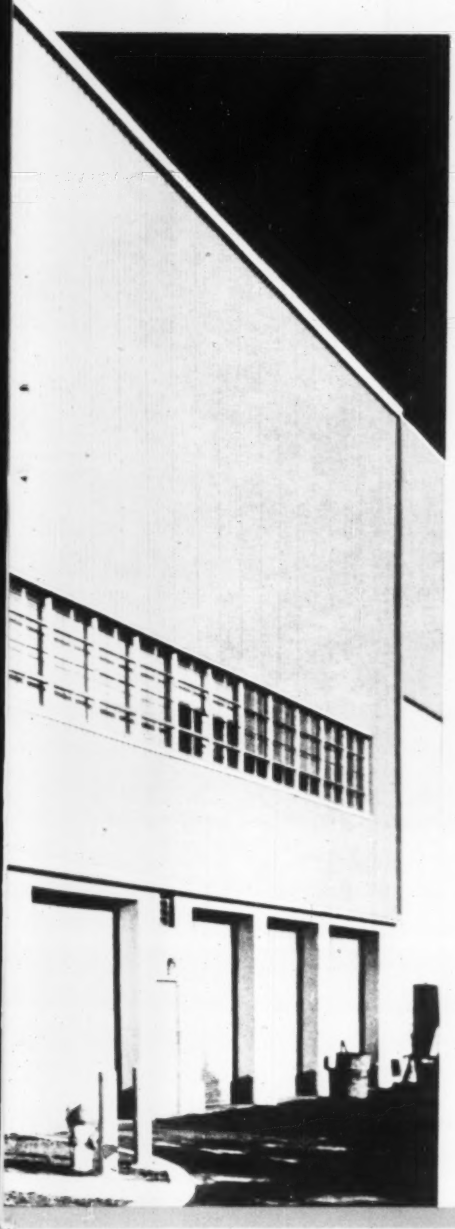
United Air Lines hangar, Newark Airport, Newark, N. J.

Designing Engineers: Port of New York Authority Staff
General Contractor: Gramercy Construction Co., New York, N. Y.
Siding Erectors: L. C. Vanderbeck Co., Hawthorne, N. J.

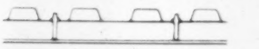


The clean, efficient appearance of this structure was achieved through use of Reynolds Aluminum Commercial Ribbed Embossed Siding, with a baked-on enamel finish. The careful engineering and design of this Reynolds product, along with its no-maintenance features, makes it highly adaptable to a wide range of commercial uses. It is available with a number of durable baked-on enamel color finishes, or in natural stipple-finished aluminum, with either 4" or 8" ribs.

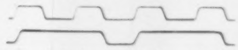
Free illustrated folders available for any of these versatile Reynolds Aluminum products. Write for them. Or consult your Sweet's catalog. Reynolds Metals Company, Richmond 18, Virginia.



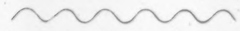
Wide Variety of Commercial Roofing and Siding.



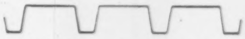
Commercial Field-Assembled Insulated Wall System. A wide variety of exterior wall treatments, offering both interior and exterior surface variations.



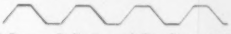
Ribbed Embossed Siding. Baked enamel colors if desired. 4" or 8" ribbing. Variety of thicknesses and lengths.



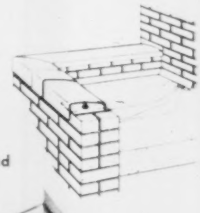
Corrugated Siding and Roofing. Mill finish or embossed. Baked enamel colors if desired. Variety of thicknesses and lengths.



Roof Deck. Economical, rust proof. Unmatched by any similar product. Variety of thicknesses and lengths.



V-Beam Siding and Roofing. Mill finish or embossed. Variety of thicknesses and lengths.



Coping and Gravel Stop. Rust-free aluminum is more and more the preferred material for Coping and Gravel Stops. Durability and efficiency at low cost.

New Econo-Wall System 101

The new Reynolds Aluminum Econo-Wall System 101, used in this office building, provides a one- or two-story wall that offers all the advantages of stock units, yet permits the architect or engineer to coordinate the new Econo-Wall with his own design. The variety of stock basic parts enables this wall to be used economically for a wide variety of structures ranging from schools, clinics and medical buildings to one- or two-story commercial and apartment buildings. A wide range of color uses is possible with this new economical curtain wall system.

American Can Co.
office building,
Edison Township, N. J.

Designing Engineers:
American Can Co. Staff

General Contractor:
Wigton-Abbott Corp.,
Plainfield, N. J.

Curtain Wall Erectors:
F. H. Sparks, Inc.,
New York, N. Y.

Economy, Quality and Beauty with

REYNOLDS ALUMINUM

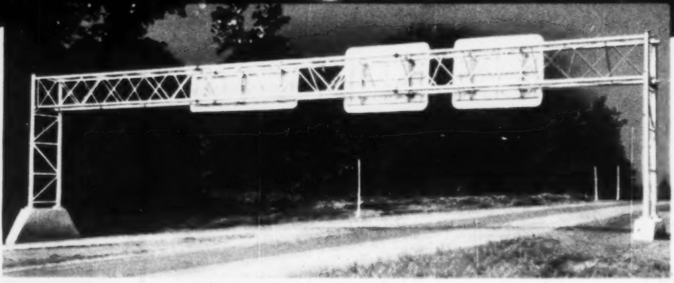
The Backs of these signs tell the story...

LOWEST MAINTENANCE

with

REYNOLDS ALUMINUM

on North Carolina's Interstate Highways



Highway signs made of Reynolds Aluminum tell you by their unpainted backs and edges that this rustproof and highly corrosion-resistant material means minimum maintenance . . . no painting! Vandalism damage is minimized, too. The metal is rugged and makes a stout bond with either paint or reflective sheeting. Whatever surface breaks occur, no rust gets in . . . no spread of deterioration . . . legibility maintained.

Installation of Reynolds Aluminum on North Carolina's Highways 40 and 85 includes nine 90' spans, 1193 signs and 501 sign supports. Signs are made up of four-foot standard increment sheets with pre-applied reflectorized Scotchlight background for site assembly. They are light to handle, easy to install, yet withstand 100 mph winds. For information on these or extruded panel highway signs, also sign blanks and street signs, call the nearest Reynolds sales office. Or write to Reynolds Metals Company, Richmond 18, Va.

40
WEST
Winston Salem

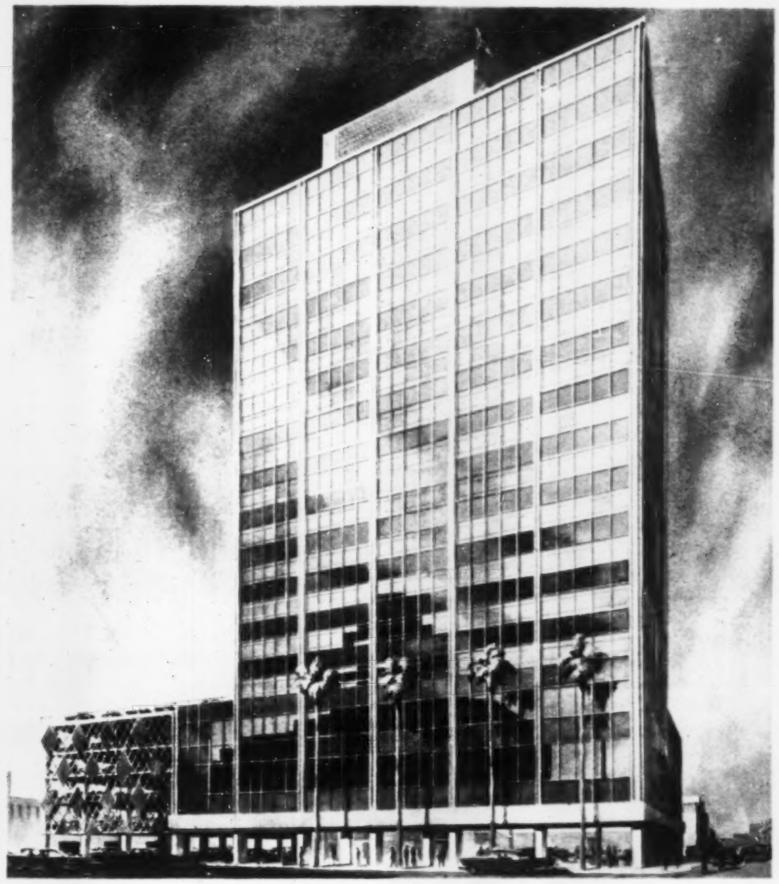
Increment sheet signs by TASSCO
(Traffic and Street Sign Company, Newark, N. J.)
—supplied in pre-arranged packages ready for installation

THRU TRAFFIC

Sign spans and tapered ground supports by Pfaff & Kendall, Newark, N. J. 90' truss section erected in 8 minutes!

REYNOLDS ALUMINUM

Watch Reynolds TV show "Walt Disney Presents," Friday Nights on the ABC-TV Network



Tampa Bank Plans Tall Tower

Construction will start in June on Tampa's tallest building—the first major downtown project there since the boom days of the mid-20s.

The $3-million building will be 16 stories high. Its steel frame, without interior columns, will span 50 ft from front to rear of the 210-ft-high tower. Six main columns at the front and rear of the building will accent a thin curtain wall of dark blue enamelled steel panels.

Marine Bank and Trust Co. will be the owner. Officials say the entire 93,750 sq ft office space has been leased; the bank itself will occupy the second and third floor above a plaza.

Architects for the project are Eliot C. Fletcher, R. James Robbins and Frank S. Valenti, all of Tampa. Moran Proctor, Mueser & Rutledge of New York City are the foundation engineers; Severud-Elstad-Krueger, also of New York, are the structural engineers.

RR Offers Right-of-Way for Conveyor

A proposed 17-mile conveyor belt system through Cleveland had gained surprise backing from the Pennsylvania Railroad Co. The railroad has offered its right-of-way through the city for construction of the moving belt.

The "rubber railroad" would run ore from the Erie lakefront to three steel companies in the city's industrial valley and out to freight yards in suburban Bedford.

Cost for construction and machinery alone is estimated at $25-$35 million.

The system would have two belts side-by-side and under a canopy. A shorter (13 miles) route calls for the belts one above the other and a 12,000-ft-long tunnel.

Riverlake Belt Conveyor Lines, Inc., is studying the two plans. This group of manufacturers has long been pushing for the conveyor belt idea. They have also proposed a conveyor from Lake Erie down into the Ohio River Valley.

Iraq Cancels Contract With English Consultants

Iraq has reportedly canceled an agreement with Mackenzie Engineering Ltd., London consultants, for planning work on a 60,000-ton steel mill at Shalchiyah, Baghdad.

One of the major industrial schemes of the Iraq Development Board, the project is one of 25 to be built by the Soviet Union under agreements recently concluded in Moscow. The Russians will apparently now take up where the British firm left off.

This latest Iraqi move further weakens the deteriorating position of Western contractors and engineers in Iraq (ENR Jan. 29, p. 44). Official hostility to Westerners has reportedly become even more pronounced since last month's abortive attempt to overthrow Gen. Abdul Karim Kassem. Communist influence in the Kassem government is said to be growing steadily.

Only three weeks ago, Iraq authorities closed the Baghdad office of Tippetts-Abbett-McCarthy-Stratton, New York City consulting engineers. The firm had been working on water development projects in Iraq since 1952.

Bomb That Didn't Explode Complicates Excavation Job

London workmen unearthed a 2,000-lb bomb while excavating for the foundations of Shell Petroleum Co.'s new headquarters building near the Thames River. The World War II relic, in perfect working order, was uncovered by a dragline operator as he pulled mud from the excavation.

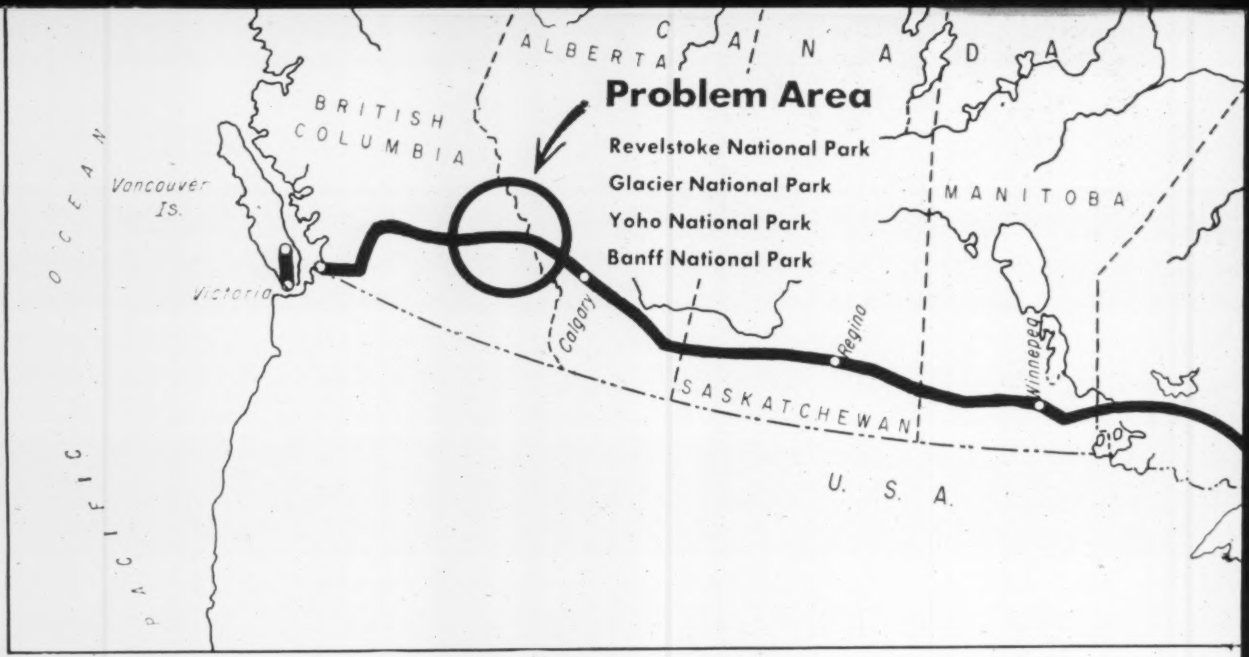
Getting the live blockbuster out wasn't a simple job. Royal Engineers found they couldn't extract the fuse; it had swollen and corroded during its 18-year burial. Sappers had to hoist the bomb out intact, load it on a truck and get it out to the country where it could be exploded harmlessly.

Norfolk Revives the Little Red Schoolhouse

The Norfolk, Va., School Board has approved construction of two small schools with only five rooms each. They are part of a Norfolk plan covering a possible total of 68 vest-pocket neighborhood schools.

Mayor W. Fred Duckworth says the recent annexation of land from Princess Anne County created the need for more schools, but that the city could not afford to build costly ones.

City Councilmen emphasized that the need for inexpensive school construction prompted the plan. They did not comment on suggestions that the project would slow down integration in the first, second and third grades.


CANADA
ALBERTA
BRITISH COLUMBIA
Problem Area
Revelstoke National Park
Glacier National Park
Yoho National Park
Banff National Park
MANITOBA
SASKATCHEWAN
Vancouver Is.
Victoria
Calgary
Regina
Winnepeg
PACIFIC OCEAN
U. S. A.

Trans-Canada Highway: In Some

G. B. Williams
Chief Engineer
Development Engineering Branch
Department of Public Works
Ottawa

From Newfoundland to the coast of British Columbia there is a thin line across the map of Canada that promises to be one of the finest scenic routes in the world.

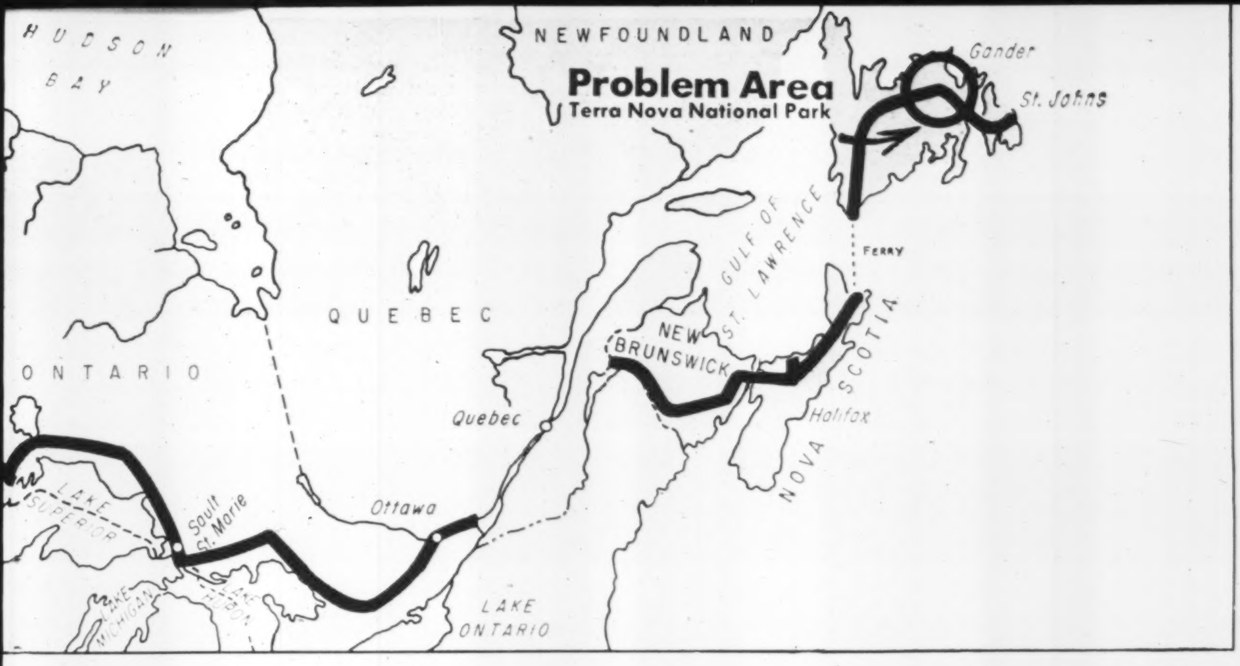
The line is the 4,470-mile Trans-Canada Highway. After eight years and millions of dollars worth of construction, the promise is becoming a reality. It's to be completed by December, 1960.

For the motorist and for the road builder the most impressive sections of the route will be those that run through five of Canada's national parks. Scenic charm was a major consideration in selecting routes through the parks. Ease of construction was sometimes secondary. Total mileage in the parks adds up to only 143 miles, but this construction offered great difficulties.

In the new Terra Nova National Park in Newfoundland the highway builders were faced with the problem of putting a road through rolling terrain that had high proportions of rock, silt and muskeg (a northern marsh land). These difficulties were overcome and traffic should be able to go through this year.

The stretches of the highway through Glacier and Revelstoke National Parks and Rogers Pass in British Columbia were a challenge because of the danger of snow slides.

Builders cut through mountains and forests.


HUDSON BAY
NEWFOUNDLAND
Problem Area
Terra Nova National Park
Gander
St. Johns
GULF OF ST. LAWRENCE
FERRY
QUEBEC
ONTARIO
NEW BRUNSWICK
NOVA SCOTIA
Halifax
Quebec
Ottawa
Sault St. Marie
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ONTARIO

Spots It's Built the Hard Way

Rogers Pass was the original route of the Canadian Pacific Railway. But avalanches and snow slides forced CPR to abandon this section of the line in 1916 in favor of the Connaught Tunnel.

Average snowfall in Glacier National Park is 390 in. per season. As much as 600 in. has been recorded. Although the pass itself is only 3,600 ft high, mountains in the immediate region reach altitudes of 10,000 ft. This, combined with heavy snowfall, makes snow slides inevitable.

The Development Engineering Branch of the Department of Public Works, in co-operation with the National Research Council, established a research group for avalanche surveys in 1955. They engaged a Swiss engineer, Peter Schavar, an expert in this field and a graduate of the Swiss Institute of Snow and Avalanche Research.

High altitude observatories were set up at Mount Abbott, Balu Pass and other spots along the Rogers Pass Route. The department now can assess avalanche and snow conditions on the peaks where avalanches originate and in the valleys where they fall.

As a result, locations for snow sheds and other forms of avalanche defense for the highway have been established. The department is also investigating a number of avalanche warning systems.

One avalanche experiment was defeated by hungry grizzly bears. Explosives were placed at likely avalanche trigger zones. The exploding charges, to be set off from the valley, were to initiate an avalanche that could be brought down at a predetermined time by the engineers. When the charges were checked a few days before the experiment, it was found that most had been eaten by grizzly bears.

Another system under study is the use of wire stretched across possible avalanche paths. A break in the wire signals a report to a control center. This enables snow removal equipment to reach the site of the avalanche and clear the roadways quickly.

Experiments have been carried out

More than 350 structures have to be built.

Tractor teams patrol avalanche areas.

MT. EISENHOWER (background) is one of the route's scenic highlights.

in liaison with CPR and the Canadian Army in controlled release of avalanches by mortar fire.

Another defense in use against avalanches is the earth mound. Similar in principle to the concrete tank traps of World War II fortifications, these mounds measure about 25 ft high and 60 to 75 ft wide at the base. They are located in possible avalanche paths. Avalanches break up when they hit the mounds.

Snow fences are being used successfully to prevent avalanches. Prevailing winds form snow cornices on mountain ridges. Some of them overhang as much as 15 ft. When they fall, the impact of tons of snow on the slopes below often triggers avalanches. Erection of snow fences on the downward side of the ridges prevents formation of snow cornices and eliminates another danger.

The department is at work on the design of snow-sheds of timber and precast and reinforced concrete. Some 4,000 ft of sheds will be required along the highway. The sheds are designed to withstand an impact load of 800 psf. This will offer an adequate factor of safety.

Ski patrols have been making surveys of the avalanche hazard areas. These patrols probably will continue after the highway is in operation. So far, everything is in the experimental stage, but it is expected that hazards of avalanche, snowfall and snowslide will be eliminated to the extent that a motorist can travel safely at any season.

An operation such as this is expensive. For example, in 3½ miles of the route through Glacier National Park more than 13 million cu yd of rock and approximately 1 million cu yd of earth will be removed. This section will cost about $1 million per mile.

Muskeg, mountains and mud are only a few of the difficulties to be surmounted as the Public Works' engineers and crews begin their seventh straight year of work.

Crews in these sections are practically moving mountains to give the road the required width and provide a safe grading.

Many of the construction men are hard-rock miners. They are blasting out the side of steep slopes 500 to 1,500 ft above the roaring Kicking Horse River and the turbulent Fraser River.

At one place in British Columbia engineers had to find some way to get through a rock wall 107 ft high to make the highway the required width. An attempt to tunnel through failed when the rock face split. Eventually, the whole wall surface had to be removed.

By the end of 1958, 3,059 miles of the 4,470 mile total had been graded and 2,175 miles had been paved. Of 357 structures with a span of more than 20 ft that have been approved for construction, 290 have been completed. This grading and paving represents only mileage that has been constructed to the standard agreed upon by the provinces and the federal government.

The road in Banff National Park is complete to the bituminous stage. In Glacier National Park on the Rogers Pass route, clearing is almost completed. It was delayed last year because of the unusually dry forest conditions. A similar situation exists in Revelstoke National Park.

Saskatchewan was the first province to complete its section. As an example of the amount of materials needed for the construction of the Trans-Canada Highway, some 7.4 million tons of surfacing materials were used on the Saskatchewan stretch. This province's section is only 406 miles long, less than 10% of the entire highway.

The Trans-Canada Highway project is the largest construction job ever undertaken by Canadian federal and provincial governments in partnership (ENR Jan. 10, 1957, p. 25).

The Trans-Canada Highway Act, passed by Parliament in 1949, provided for the federal government to pay 50% of the construction costs for portions built in each province according to agreed upon standards.

Total cost of the highway was originally estimated at $300 million. The act called for completion of the route by December 1956. But by February, 1955 only 24% of the construction was completed and costs were going beyond the original estimate. Now, the total value of projects approved is about $429 million.

When it became apparent that the highway could not be completed by the expiration date of the act, the federal government called a conference with the provinces.

The agreement was extended four years. It was changed to provide that the federal government would pay 90% of the cost of building 10% of the mileage in each province. The costs of the remaining mileage would be shared by the federal government and the governments of the various provinces. The road will remain provincial property and be maintained by the provinces.

The cost of building the highway through the national parks is being paid by the federal government.

The Province of Quebec did not enter into the agreement for construction of a portion of the Trans-Canada Highway because it had routes between Ontario and New Brunswick.

Trans-Canada: Vital Statistics

The planners' design for the Trans-Canada Highway is not elaborate. The basic plans call for a two-lane highway. However, the federal government has agreed to consider deviations where, because of the nature of the terrain, standards cannot be met within good engineering practice and economy.

Here are the basic geometric standards and design criteria.

Right-of-way	100-ft minimum	
Curvature	Desirable	3 deg
	Maximum	6 deg
Gradient	Maximum	6%
Sight Distance	Vertical	Min. 600 ft
	Horizontal	Min. 600 ft
Pavement	Width	22 and 24 ft
	Thickness	Min. 3 in.
	Loading	Repeating 18,000-lb axle
Shoulders	Min. 5 ft, max. 10 ft	
Bridges	Loading	H20-S16
	Clearance	Min. 14 ft 6 in.
	Width	For length 30 ft or less Width of pavement plus shoulders
		For length 30 ft to 100 ft Minimum 27 ft
		For length over 100 ft Minimum 24 ft

On the Trans-Canada Highway . . .

Electricity Stabilizes Bridge Subsoil

One link of the Trans-Canada Highway has been completed despite treacherous soil conditions. It is a bridge near Terrace Bay, Ont., on the north shore of Lake Superior.

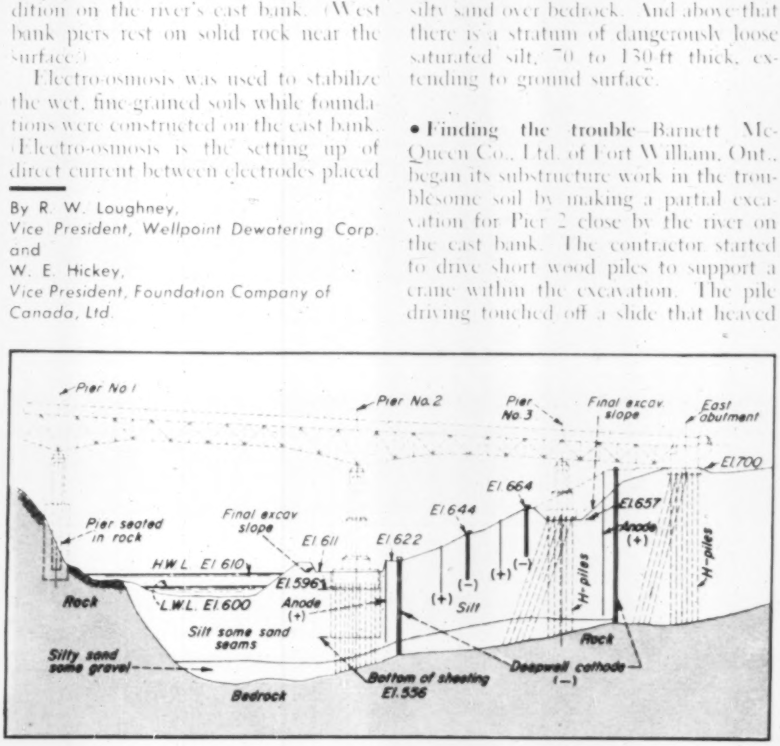
The piers and abutments of this 716-ft, four-span, deck-truss crossing of Little Pic River are supported on bedrock despite a difficult, saturated subsoil condition on the river's east bank. (West bank piers rest on solid rock near the surface.)

Electro-osmosis was used to stabilize the wet, fine-grained soils while foundations were constructed on the east bank. (Electro-osmosis is the setting up of direct current between electrodes placed in soil to induce flow of water, along with ions, from anode to cathode. Its effect is to control direction of seepage forces, develop tension in pore water, reduce water content of the soil and in some cases change the basic chemical composition of the soil. These actions working together make the soil stable.)

By R. W. Loughney,
Vice President, Wellpoint Dewatering Corp.
and
W. E. Hickey,
Vice President, Foundation Company of Canada, Ltd.

The bank has a 10-ft layer of dense silty sand over bedrock. And above that there is a stratum of dangerously loose saturated silt, 70 to 130 ft thick, extending to ground surface.

• **Finding the trouble**—Barnett McQueen Co., Ltd. of Fort William, Ont., began its substructure work in the troublesome soil by making a partial excavation for Pier 2 close by the river on the east bank. The contractor started to drive short wood piles to support a crane within the excavation. The pile driving touched off a slide that heaved the excavation, crane and wood piles.



ANODES AND ELECTRODES set up flow of ions (and water) through ground to stabilize slope for piledriving for piers 2 and 3.

After the slide, the east bank—for a width of 200 ft and its full face—moved downward 15 ft, filling the excavation.

Work stopped. The construction equipment was gently removed from the toe of the slope.

Driving then was started on the abutment H-piles at the top of the bank. Again the vibrations set up by the pile driving caused the slope to move—an additional 15 ft for a total movement of 30 ft.

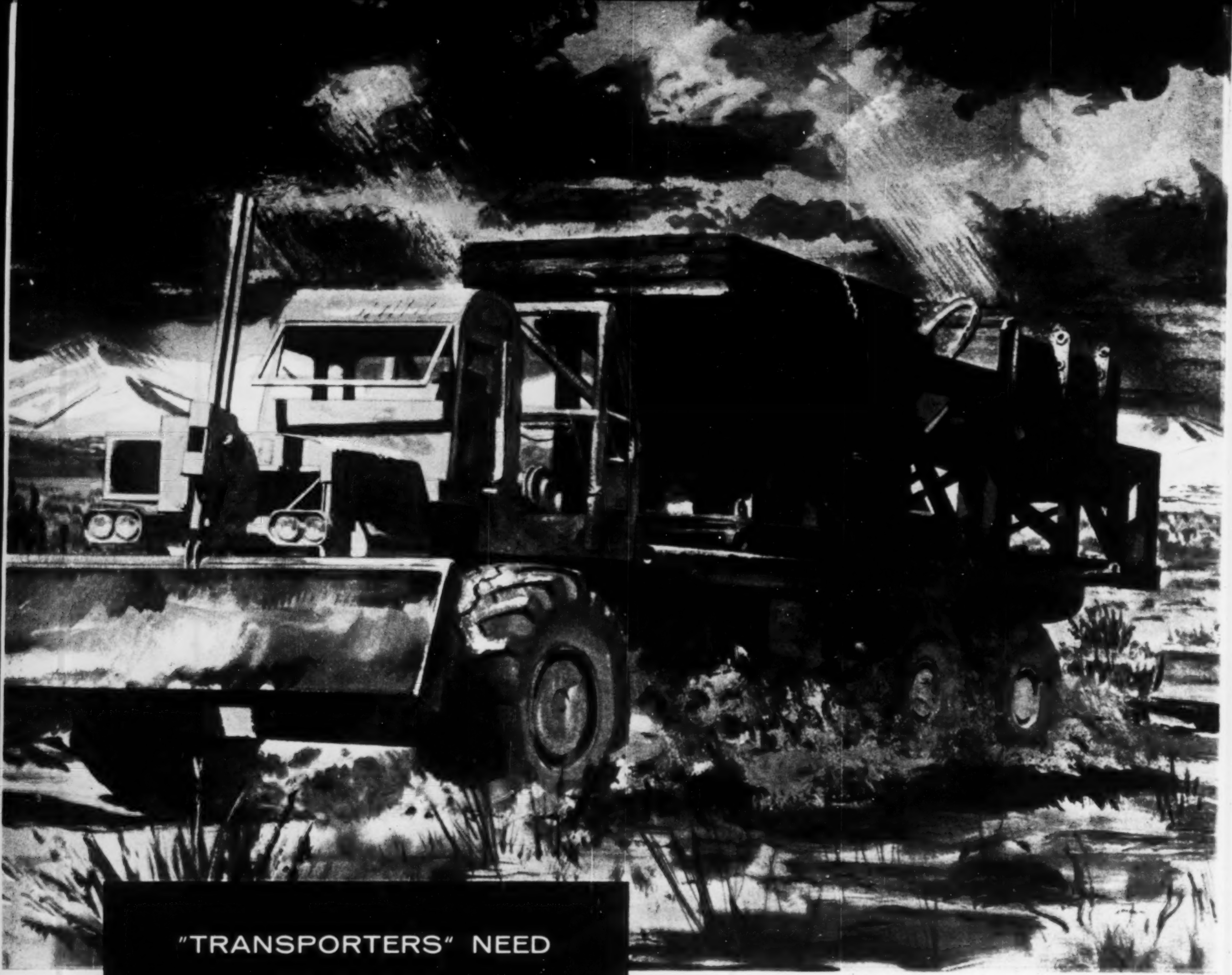
By now the entire soil mass on the east slope was so sensitive that the slightest disturbance threatened to cause another slide.

The construction of Pier 3 required a 50-ft sidehill cut higher up on the bank. Prevailing soil conditions made it impossible to proceed with construction of Piers 2 and 3; all work on the east bank was brought to a standstill.

A study was conducted to determine the best method for excavating and pile-driving for Piers 2 and 3. These procedures were considered: freezing the slope, chemical stabilization, extensive sheeting, caissons, removal of the unstable soil—and electro-osmosis.

• **Testing the solution**—Electro-osmosis was chosen, and laboratory and field tests were ordered to study the contemplated installations. Representative samples of the soil were forwarded to Harvard University for analysis by Prof. Leo Casagrande, developer of the technique of electro-osmotic soil stabilization. The samples were tested for water content, sensitivity, electro-osmotic permeability and conductivity, and pore tension.

Moisture content of the soil was



"TRANSPORTERS" NEED NO ROADS . . . CARRY 30 TONS OR MORE OVER ROUGH MOUNTAIN, DESERT AND JUNGLE TRAILS

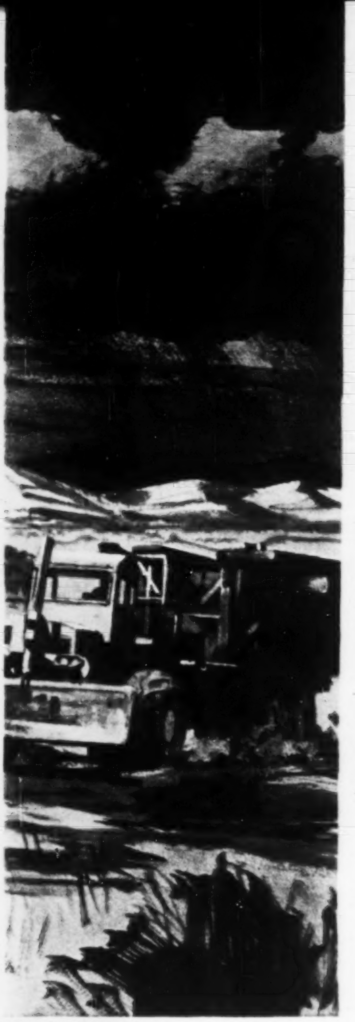
Shown here crossing the Pakistan Desert, are Electric Transporters built by R. G. LeTourneau, Inc. These, and machines like them, have penetrated many of the world's roadless wilderness areas. Carrying 30 to 100 tons or more, these unique vehicles use the tremendous power and traction of Electric Wheels to carry payloads up 30% mountain grades, over soft desert sand and gummy

Electric Arch skids 30 tons of logs from rugged timber areas. Coming downgrade, regenerative electric braking holds Arch and 30 tons of logs safely, surely at selected speed. Brakes have no wearing parts.

Erector picks up, transports and places Corporal Guided Missile at launching site. All movements are powered and controlled by standardized, trouble-free electric components built by R. G. LeTourneau, Inc.

Aircraft Tow Tractor pulls 250-ton plane on glare ice. Electric Wheels give "soft" starts, permitted by infinite range of power control from zero to full speed. Special "ice gripper" for slick surfaces.

5-year performance on every continent proves out Electric Drive by R. G. LeTourneau, Inc.



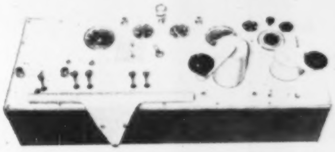
The Electric Wheel, a highly-advanced drive system manufactured by R. G. LeTourneau, Inc., is now in use on every continent – in opposite extremes of climate, and in widely varied industries. Machines equipped with Electric Drive have fully demonstrated their superiority in getting more work done, faster, and at lower costs than can be accomplished by machines with conventional drive.

Simplicity, ruggedness and tremendous power are what you get with the Electric Wheel system. The Electric Wheel itself has a DC electric gearmotor mounted in the hub, powered by a self-contained diesel-electric generating system. *Every wheel is a driving wheel.* Power is automatically and instantly transmitted to the wheels with best traction; transmissions, driveshafts and differentials are completely eliminated.

Extensive development of the Electric Wheel system has created a complete family of integrated, efficient and trouble-free components – all of which we make ourselves. This includes the generators, electric motors, switch gear, gear reduction – in fact we even make the steel. The result is unusual dependability and performance.

NOW IN EARTHMOVING

Electric Drive earthmoving machines offer great, new productivity. One of several new types available is shown below. See them now for your next BIG jobs in construction and mining. For information please call or write 2395 South MacArthur, Longview, Texas.



jungle mud. Huge, low-pressure tires for high flotation . . . all-wheel drive . . . electric brakes that never wear out, are some of the features that make the Transporter a successful cargo hauler where conventional machines have failed. These are features you can now get in earthmoving machines, built for the BIG construction and mining jobs. Call or write for more information.

R.G. LETOURNEAU INC
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E-103

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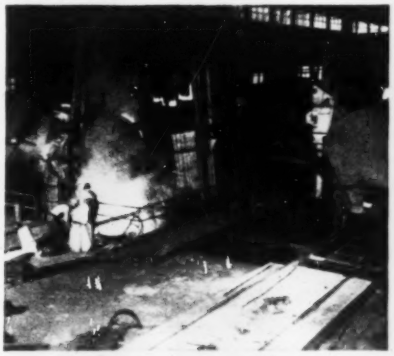

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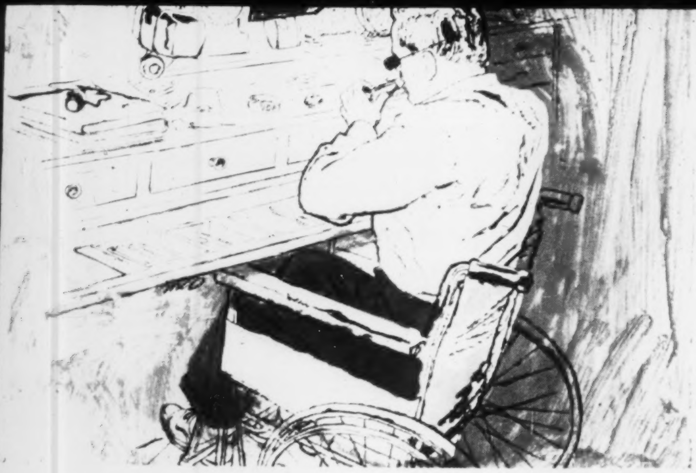
NEW EARTHMOVING EQUIPMENT. L-50-Ton Digging Scraper has all-wheel Electric Drive . . . electric controls . . . self-loads 50 tons in double buckets. Write for details on BIG equipment in new earthmoving line.



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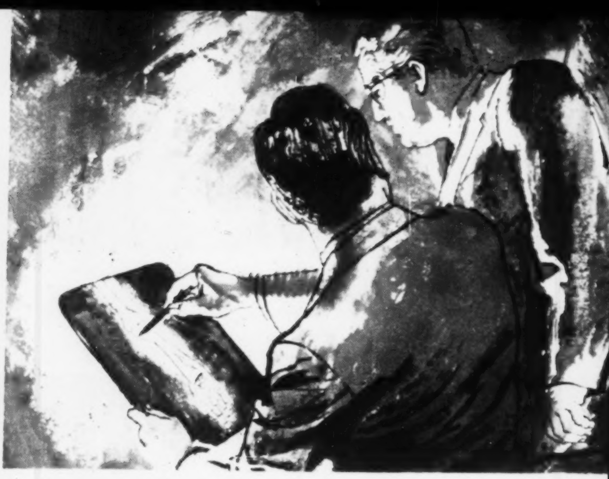

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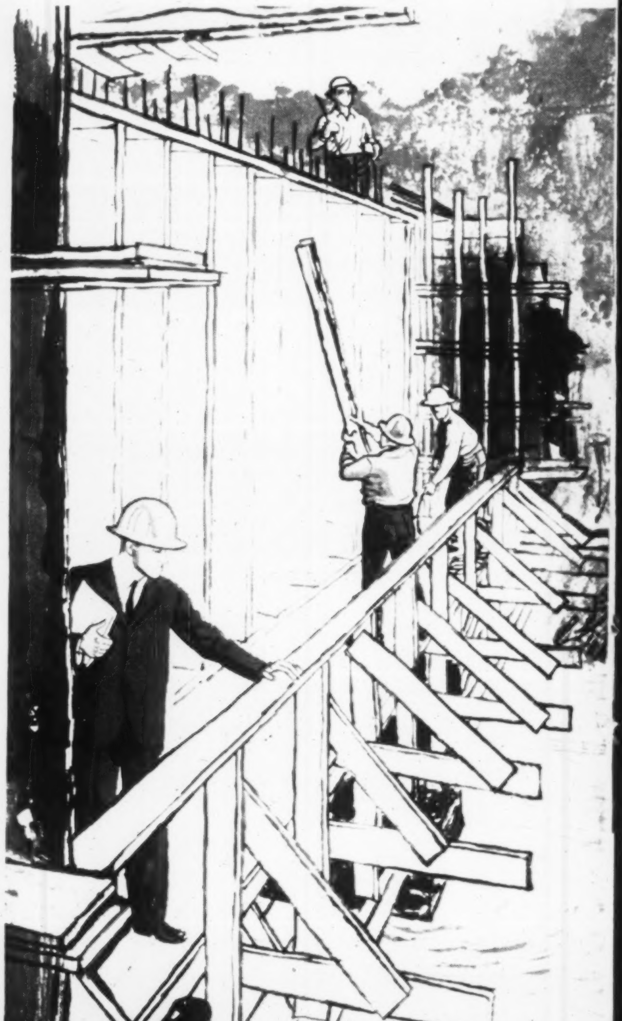
How safety engineering pays off. By checking for hazards on every phase of your job, Liberty's construction safety engineers can help you cut compensation costs. Hundreds of our construction policyholders have saved money this way.



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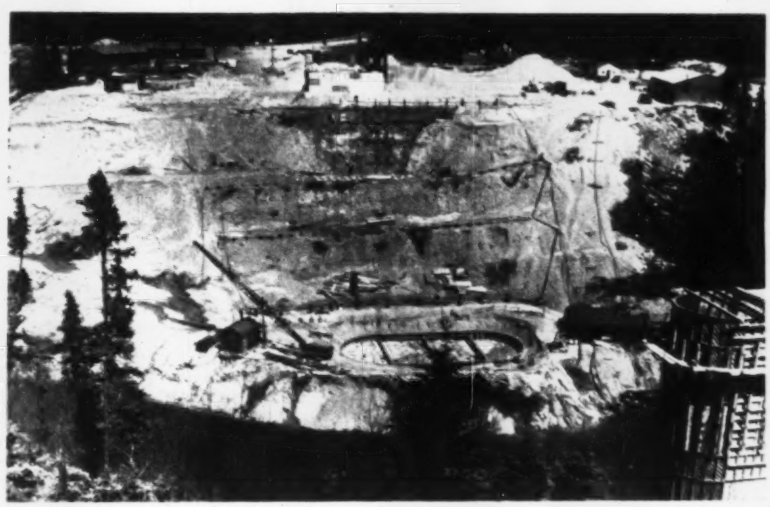

THE STABILIZED BANK had strings of anodes, cathodes, wellpoints and deepwell pumps helping to drain its troublesome soil.

found to average 26% of dry weight. The silt was very sensitive to vibrations; at a water content greater than 24% it liquified readily when subjected to minor vibrations. The laboratory tests disclosed that electrical drainage would be effective in this silt. They showed that a decrease in moisture content of 3% would increase the stability of the slope sufficiently to resume work.

The electro-osmotic coefficient of permeability for one-dimensional flow was found to be about 1.5×10^{-5} cm/sec per volt cm. Although on the low side, the order of magnitude was considered adequate to assure satisfactory drainage. The conductivity of the silt was found to average 3×10^{-4} ohm^{-1} cm^{-1}, indicating a low average energy consumption for this project. Finally, the laboratory tests showed that, depending on the electrical potential applied, an appreciable tension would develop in the pore water of the silt within seven days of the treatment. With a potential gradient of 0.3 volt/cm, which was considered feasible for this project, the tension in the pore water reached approximately 16 in. Hg. This was an added factor of safety against the development of flow slides.

A field test conducted by Wellpoint Dewatering Corp. confirmed the feasibility of using electro-osmosis at a reasonable cost.

• Setting the procedure—Based on the laboratory and field investigations, a procedure for stabilizing the bank by electro-osmosis was presented to the Ontario Department of Highways, which analyzed it and then directed it be used.

First step was to place a 3-ft blanket of sand and gravel on the bank to protect the exposed silt against frost action. Previous experience demonstrated that unless this protection was provided several feet of the slope would slide each spring due to the thawing of ice lenses in the silt.

Part of the protective sand and gravel blanket was used temporarily to construct three berms across the face of the slope and a berm at the toe of the slope. The berms provided access to the slope, permitted careful moving of a crane across the slope.

All the electro-osmotic equipment was installed by working from the berms and the top of the slope. Starting at the toe of the slope and progressively moving up the slope, three rows of shallow anodes, 40 ft long, and three rows of shallow cathodes, 40 ft long, were installed. Then one row of deep anodes, 80 to 120 ft long, and one row of deep cathodes, 100 to 140 ft long, were installed at the bottom and the top of the slope. The anodes and cathodes were spaced about 6 to 10 ft apart at intervals across the face of the slope for the full width of the slide. Each row of electrodes was spaced at about 50 ft intervals up the slope.

All anodes were jetted into place. The shallow cathodes were installed using a jet-and-drive casing. The deep cathodes were installed by a jet-and-drive casing method along with well drilling methods. Wellpoint pumps connected to header lines, which in turn had individual connections to each cathode, were used to remove the water that collected at the shallow cathode. Deepwell pumps were used to remove the water at the deep cathodes.

• Fighting the cold—Sub-zero weather made the electro-osmotic work difficult. It was tough obtaining production in the cold weather (− 10 F to − 35 F during most of the installation and about one-third of the operation).

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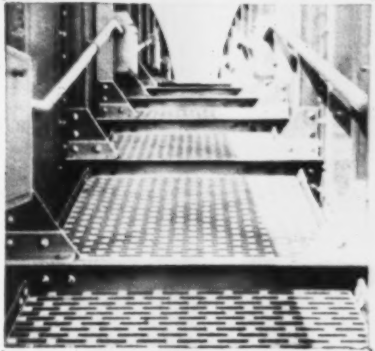

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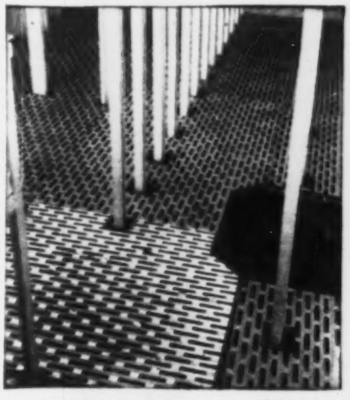

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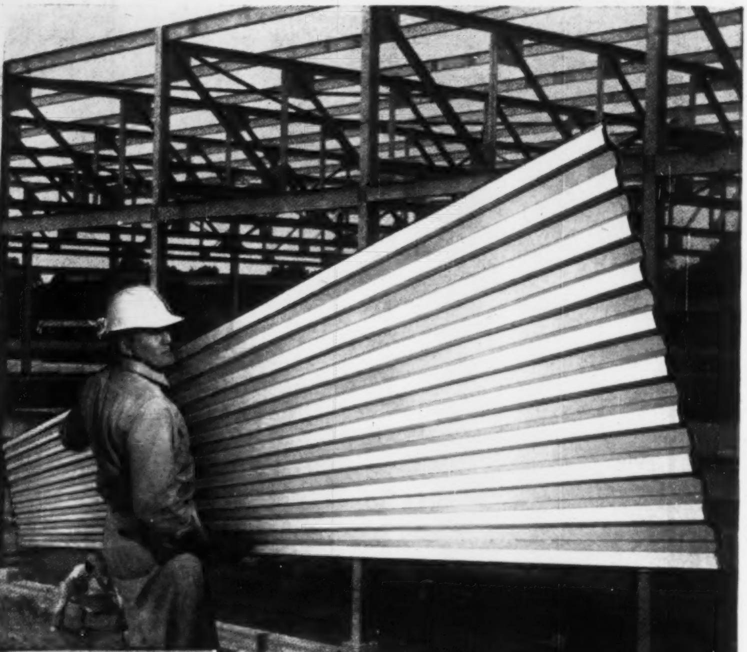
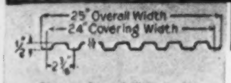
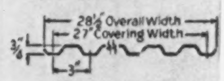




Standard Weight
12' 3" long,
for spans to 3' 6"



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Ribform uses less concrete than flexible types of centering. Pour and finish in one operation. Deflection at mid-span is as little as 1/4 inch under 3" of wet concrete at a maximum span of 5' 4" (based on a design stress of 30,000 psi).

See Sweet's Light Construction File 1b/In.

Welding to structural supports is done in the ribs of the sheet.

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. . . Electricity stabilizes subsoil

The intense cold froze the jetting water in the hoses, although it was moving at a high velocity. Whenever a pump stopped for a few minutes, days were required to thaw out the frozen lines. The jetting water ice-coated everything, making it impossible to move equipment without winching it.

But very little trouble was encountered once the electro-osmotic system was put in operation and all lines carrying water had been properly insulated.

• **Achieving success**—The electro-osmotic system was operated continuously around-the-clock throughout the stabilization period. From 100 to 150 volts was applied to the electrodes at low amperage.

A check on the water content of the silt after three months of electro-osmotic treatment showed an average decrease of 3½%. During this same period, the wet unit weight of the silt increased an average of 6 lb. per cu ft.

During the electro-osmotic treatment the water table in the silt stratum dropped appreciably. Near the top of the slope it fell from El 670 before treatment to El 630 after treatment. Near the bottom of the slope, adjacent to the river, it dropped from El 605 to El 560 after treatment.

Work on Pier 2 was started immediately after completion of the installation of the electro-osmotic equipment. Excavation for the foundations of Piers 2 and 3, and the subsequent pile driving operations, were accomplished without difficulties. The effectiveness of the electro-osmotic treatment was particularly evident in the 50-ft cut made in the silt at Pier 3. There, a slope of 1 on 1 withstood the severe vibrations of pile driving for the pier. It didn't budge.

The Foundation of Canada Engineering Corp. Ltd. designed and supervised this job, represented by Burt Nixon and Henry Spindler.

GEOCON (an affiliate of The Foundation of Canada Engineering Corp. Ltd.) made the borings and did the laboratory testing work on the project.

Barnett-McQueen Co., Ltd., the general contractor, had Ralph Knudson as superintendent.

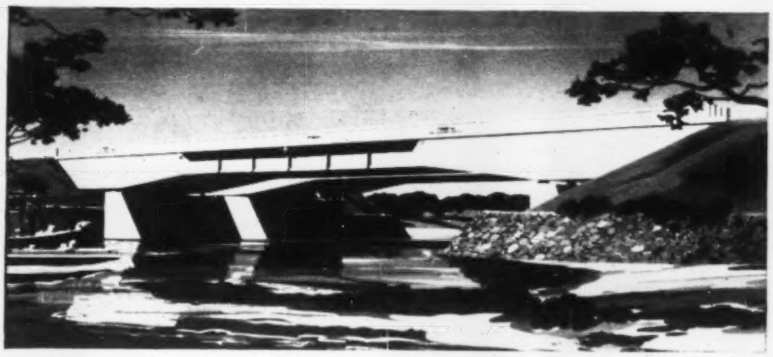
The electro-osmotic system was designed and manufactured by Griffin Wellpoint Corp. Wellpoint Dewatering Corp. of New York installed and operated the system. They were represented on the job by Charles McKee and William Gula.

G. Panter, regional engineer, and J. B. Garland, district engineer, were responsible for approval of construction methods and quality control for the Ontario Department of Highways.

ALPHA

BETTER CONSTRUCTION THROUGH
BETTER USE OF CEMENTS

news and notes from the field



Oneida Lake Bridge, Brewerton, N. Y., with a span of 320', total length of 460'. General Contractor: Terry Contracting, Inc., Long Island City, N. Y. Consulting Engineers: Summers, Munninger and Molke, Albany, N. Y.

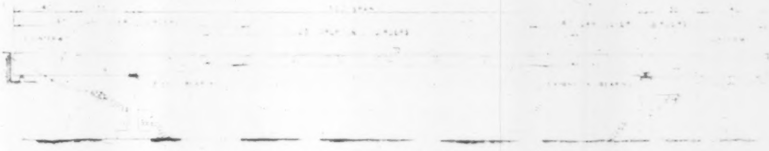
4000 p.s.i. Concrete before post-tensioning
Longest Prestressed Span in United States

Now under construction, the Oneida Lake Bridge will carry the Empire Stateway Interstate Route 505 across the longest prestressed concrete bridge span in the United States. Alpha Portland Cement (Type II) has been selected exclusively for this structure.

Present plans call for 4000 p.s.i. concrete strength before post-tensioning.

Two separate structures. The Oneida Bridge is actually two separate parallel structures; one for northbound and one for southbound traffic. Cantilever end girders will support drop-in center girders, with cantilevers counterweighted at the abutments.

Three job-site casting beds. Two casting beds will be used for the I-shaped cantilever girders which will be 14' high and 147' long, weighing 250 tons each. There will be 12 on each side. They will be cast on the site, rolled forward and positioned. The T-shaped center or suspended beams will be cast in the third casting bed. They will be floated to the center and lifted into position. These will be 231' in length and will weigh about 222 tons each. They will overlap the cantilevers by 25' on each end (per sketch). There will be a total of 10 of these suspended beams.



LONGITUDINAL SEC

Note: This mix was designed for this particular job only and is not intended for use on other jobs.

Proposed Concrete Mix—1 Cu. Yd.

Cement (Alpha Type II)	**$7\frac{1}{2}$ bgs.**
Sand (Surface dry)	**1,280 lbs.**
Crushed Stone (#4 to $\frac{3}{4}$")	**900 lbs.**
Crushed Stone ($\frac{3}{8}$" to 1")	**900 lbs.**
Total Water	**36 gals.**
Slump	**3"**

Alpha Field Engineer on the job from the start

An Alpha Field Engineer was on the Oneida Bridge job at the very beginning assisting with various preliminary tests.

On this job, the contractor and consulting engineers are responsible for the mix design which was worked out with the assistance of an Alpha Field Engineer. The tentative mix for the prestressed members is shown below. For 4000 p.s.i. strength at an early age, a $7\frac{1}{2}$ bag cement factor is proposed.

Alpha customers have learned to expect not only finest quality cements, but on-the-job engineering assistance to insure best procedure, best results. Ask your Alpha sales representative about the wide variety of helpful services available to users of Alpha cements, or write to Alpha Portland Cement Company, Easton, Pa.

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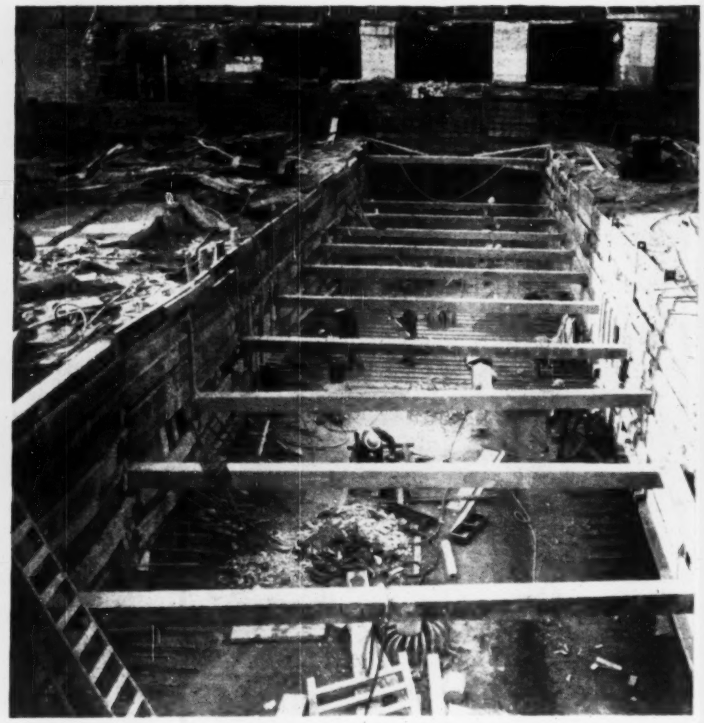
Foundations for this Detroit bank . . .



had to be excavated in narrow strips until . . .

Strip Excavation for Detroit

Alfred Zweig
Associate
Albert Kahn Associated Architects and Engineers
Detroit, Mich.

The first large-scale, privately owned office building erected in downtown Detroit since the 1930's stands on feet of clay—100 ft of soft blue clay underlying 10 to 15 ft of fill.

That was the central problem facing builders of the 15-story National Bank of Detroit Building, which will be completed this summer in the heart of the city's financial district. The building links the financial district with the shopping and business area and the rapidly rising Civic Center.

The new bank building occupies a 281x131-ft area. It rises 232 ft from street level to top of penthouse, and has 18 floors. They include the penthouse, the pipe space below the second floor, the lower banking floor at the first-basement level and a second-basement or safe-deposit floor.

• Cellular-type floors Most of the floors in the structural-steel frame building are cellular-type steel topped with a 2½-in. concrete fill. Concrete floor slabs are used below the main banking floor. They serve as a brace against the large earth pressures. Concrete slabs are also used for all areas housing mechanical equipment to provide better vibration damping and sound absorption.

The beams at the exterior walls and those supporting the mechanical equipment are encased in concrete to provide better corrosion protection at the exterior walls and, under the mechanical equipment, add to the damping value against vibrations. This was of paramount importance in the design.

On the exterior, the 3-ft, 8-in.-wide stainless-steel window frames and porcelain-enameled steel panels alternate with 6-ft 4-in.-wide marble panels. Windows in successive stories are staggered to create a tapestry-like appearance.

• Unusual foundation problem Preliminary subsoil investigations showed a 10-to-15-ft layer of fill. Under the fill is a 100-ft stratum of soft blue clay resting on a layer of hardpan, generally less than 10 ft thick. Sound limestone lies below the hardpan at a depth of 120 to 130 ft below street level.

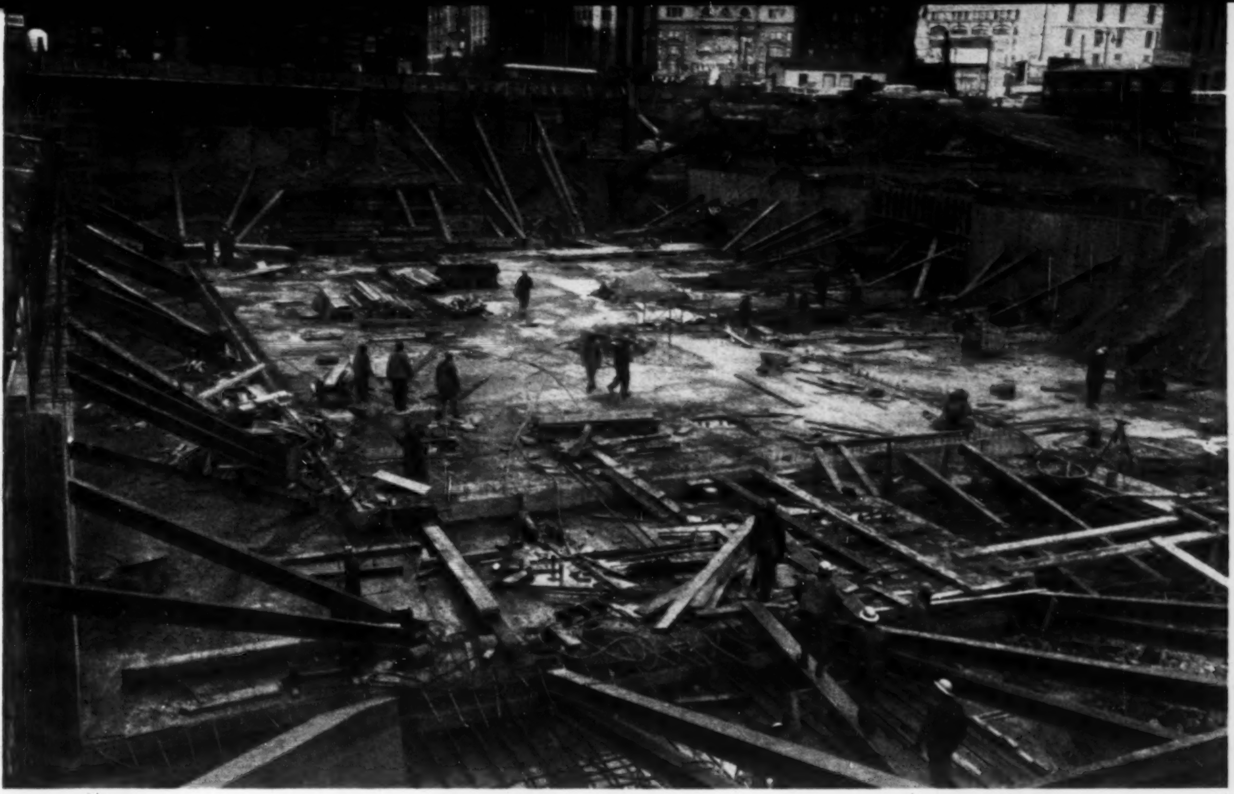
Laboratory tests of subsoil conditions were conducted by the Engineering Research Institute of the University of Michigan. They indicated a transverse shearing resistance of the clay averaging less than 100 psf in the upper 20 ft. This resistance increased gradually but did not exceed 300 psf near the hardpan.

Further studies by the Institute led to the conclusion that the soft clay in the upper stratum will behave like a liquid with the specific weight of clay, especially if viewed on a long-term basis.

This finding was the basis of all design considerations and led to some unusual solutions.

• Third basement abandoned—The original idea of a third basement had to be abandoned. Such a basement, extending more than 40 ft below street level, would have had to be designed for an uplift pressure in excess of 4,000 psf. This would have meant an intricate and time-consuming construction procedure and a most uneconomical design.

Even after confining the building to only two basements, numerous design and construction solutions had to com-



a concrete floor covered the whole excavation. Meanwhile, struts braced the walls.

Bank Building Avoids Clay Slides

teract the heavy uplift loads. It was also necessary to guard against a possible clay slide during excavation and construction.

The floor slab of the second-basement, or safe-deposit floor, is designed for an upward pressure of 1,800 psf at the south end. This pressure increases to 2,500 psf at the north end, where the street level is about 8 ft higher than at the south side.

These pressures were increased by about 800 psf at the elevator pits, which extend another 13 ft below the basement floor.

Lateral pressures of the same magnitude were used for the design of the exterior basement wall.

To avoid a slide of the soft clay into the excavated space during construction, the contractor was not permitted to excavate the entire basement area first—the usual procedure for firmer soils—and then concrete the basement floor and walls. The specifications, instead, called for the excavation to proceed in 25-ft-wide alternate strips centered on the columns and extending the full building width of 131 ft.

Immediately after excavating one strip, concrete for the floor slab and exterior end walls was placed before excavation for the next strip could begin.

• Caissons to hardpan—Before the start of general excavation, caissons were sunk to hardpan. Caisson diameters varied from 3 to 6.5 ft, with bottom bells up to 10.5-ft dia to bring the soil pressure under the bells to the allowable value. The bearing value of the soil under each caisson was established by penetrometer tests conducted at the bottom of the caisson. The allowable bearing value varied from a minimum of 15 to a maximum of 25 tons per sq ft.

It would have been possible to avoid the rather costly belling of the caissons by extending the shaft through the hardpan to the underlying limestone layer. But there was danger of encountering either ground water or gas—not too unusual in the Detroit area.

To prevent cave-in, steel cylinders were dropped into the excavated caissons and withdrawn as the concrete was placed.

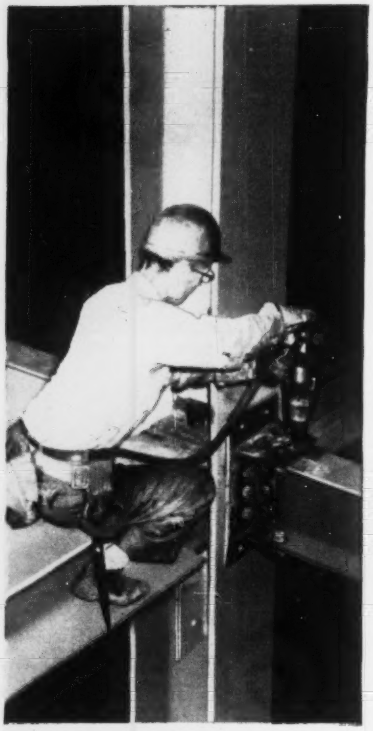
As soon as belling and clearing of the bottom was completed, the caissons were filled with concrete up to the underside of the lower basement slab. Temporary sheeting was provided from this elevation to the street level to sustain the surrounding clay before starting the general excavation.

• Extraordinary reinforcement—The heavy reinforcing bars placed into the open caissons shafts and extending the full length of the caissons are of special interest. Number and size of the bars varied, reaching a maximum of 24 No. 11 bars at the critical points.

The bars' principal purpose was as an anchor for the assumed upward or buoyancy forces acting on the underside of the basement slab during construction. The dead weight of the completed structure is sufficient to counterbalance the assumed upward forces safely. During the construction period, however, before the dead weight of the building could counteract the unusually high uplift, these forces were of considerable concern to both the architect and the contractor.

As a secondary benefit, the reinforcing bars reduced somewhat the size of the caisson shaft required for the downward-acting gravity force.

The anchor bars extended above the caisson tops well into the basement slab. They were hooked into the slab for



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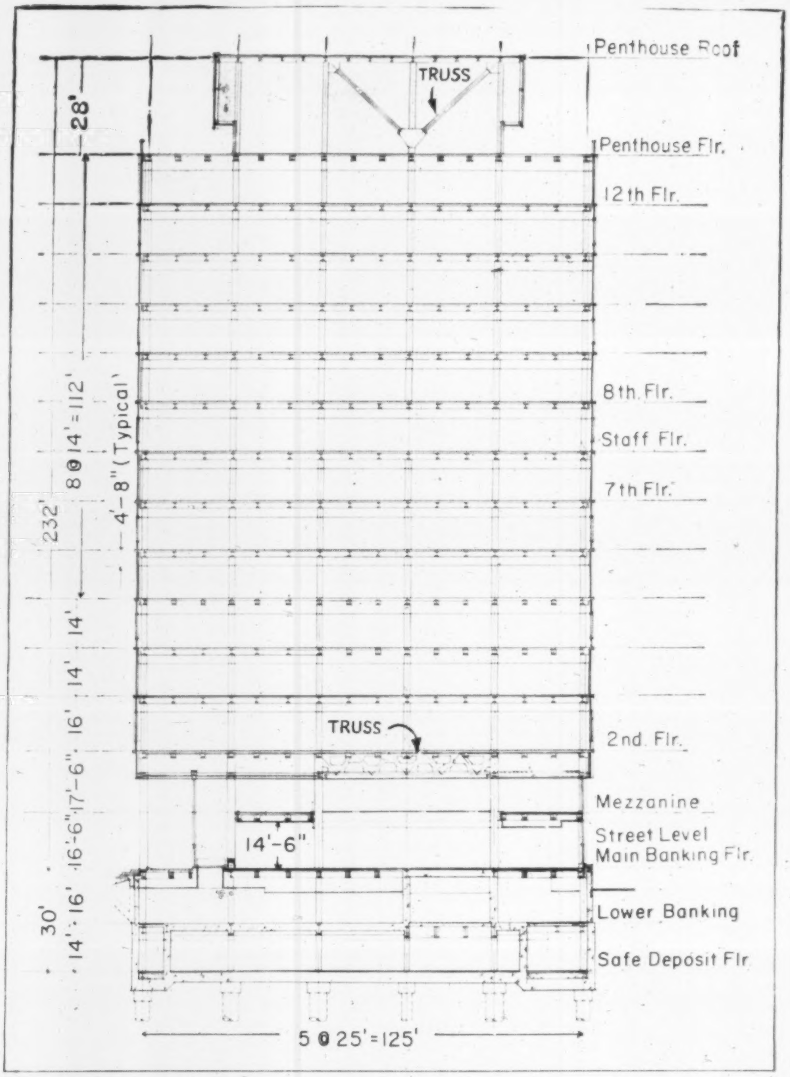


TRANSVERSE SECTION shows trusses at two levels. At the second floor, the trusses carry six stories above; penthouse trusses carry five stories below.

better load transmission. Immediately after each 25-ft-wide strip was excavated, the 3-ft thick concrete slab was placed and anchored through these hooked bars to the caisson. This provided enough dead weight of its own and, through the bells, engaged enough weight of earth to insure the necessary safety factors against uplift. For this load condition, the base slab was designed as cantilever.

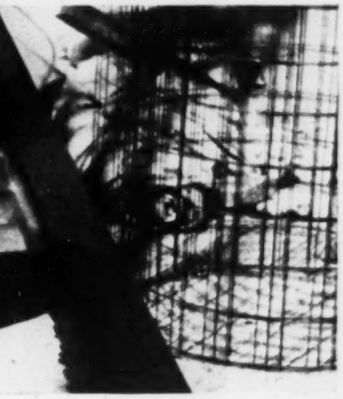
For the final load condition, the slab was designed as a two-way flat slab anchored to the caissons. To obtain the necessary reinforcing continuity, short bars were pushed through the timber sheeting of each strip excavation into the adjacent unexcavated earth. They were welded on both ends to the main reinforcing.

• **Soldier beams**—Steel soldier beams, driven 4 ft to 7 ft c-c, supported the 3-in. timber sheeting of the excavations. This sheeting, together with the soldier beams, was removed where used for temporary purposes. At the exterior basement walls, however, both the sheeting and the soldier beams remained in place as permanent forms for the concrete walls.

Diagonal struts acted as temporary lateral supports for the heavily loaded and reinforced exterior walls. They butted against the 3-ft-thick floor and were removed after the reinforced concrete slabs of the lower and main banking floors were in place.

The structural steel framework, about 6,000 tons, is conventional multistory-type construction. Columns are spaced 25 ft c-c in both directions. Wind loads at each floor were distributed to all columns capable of receiving moment connections according to their relative stiffness. The designers assumed the

Pre-stressed concrete structural member removed from forms which have been sprayed with Shell Form Compound. Note the smooth, pit-free surfaces.



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floors to act as rigid horizontal diaphragms rather than analyzing each cross bent separately.

Columns at the elevator and utility cores have eccentric beam connections, which were omitted from the wind analysis because they did not provide sufficient bending rigidity.

The architecture required the omission of a column row at the main banking floor, the first-floor level. To accomplish this, trusses 7 ft, 6 in. deep were provided at the second-floor, 35 ft above the first floor.

• **Building hung from roof**—Had it been necessary to carry the roof and all 13 floors above the main banking floor on these comparatively shallow trusses, their members would have become too heavy and uneconomical. To avoid this, the same row of columns was omitted at the staff floor, which is located between the seventh and eighth floors. This reduced by 50% the load to be carried by the trusses over the main banking floor. It also provided an unobstructed meeting room on the staff floor. The floors above the staff floor were hung from deep trusses in the penthouse. For erection a temporary column was used at the staff floor level.

Since plans call for the penthouse to serve as a fan room, the two truss diagonals in this space did not represent any obstacle to the installation of mechanical equipment and ductwork.

• **Exterior wall design**—Stainless steel frames hold the reversible windows and the metal panels above and below them. Panels are of insulated porcelain enamel, umber-colored. A 2½-in. marble facing is attached to a 5-in. sandwich backup panel of lightweight, insulated precast concrete.

This panel has a 1½-in.-thick glass fiber core (6 lb per cu ft density). This is encased in a 1¾-in. concrete envelope reinforced with 6x6-in. No. 4 wire fabric.

To assure combined action of both concrete covers at front and back of the panel, trussed shear ties were cast at the third points, through the insulation, into the concrete covers.

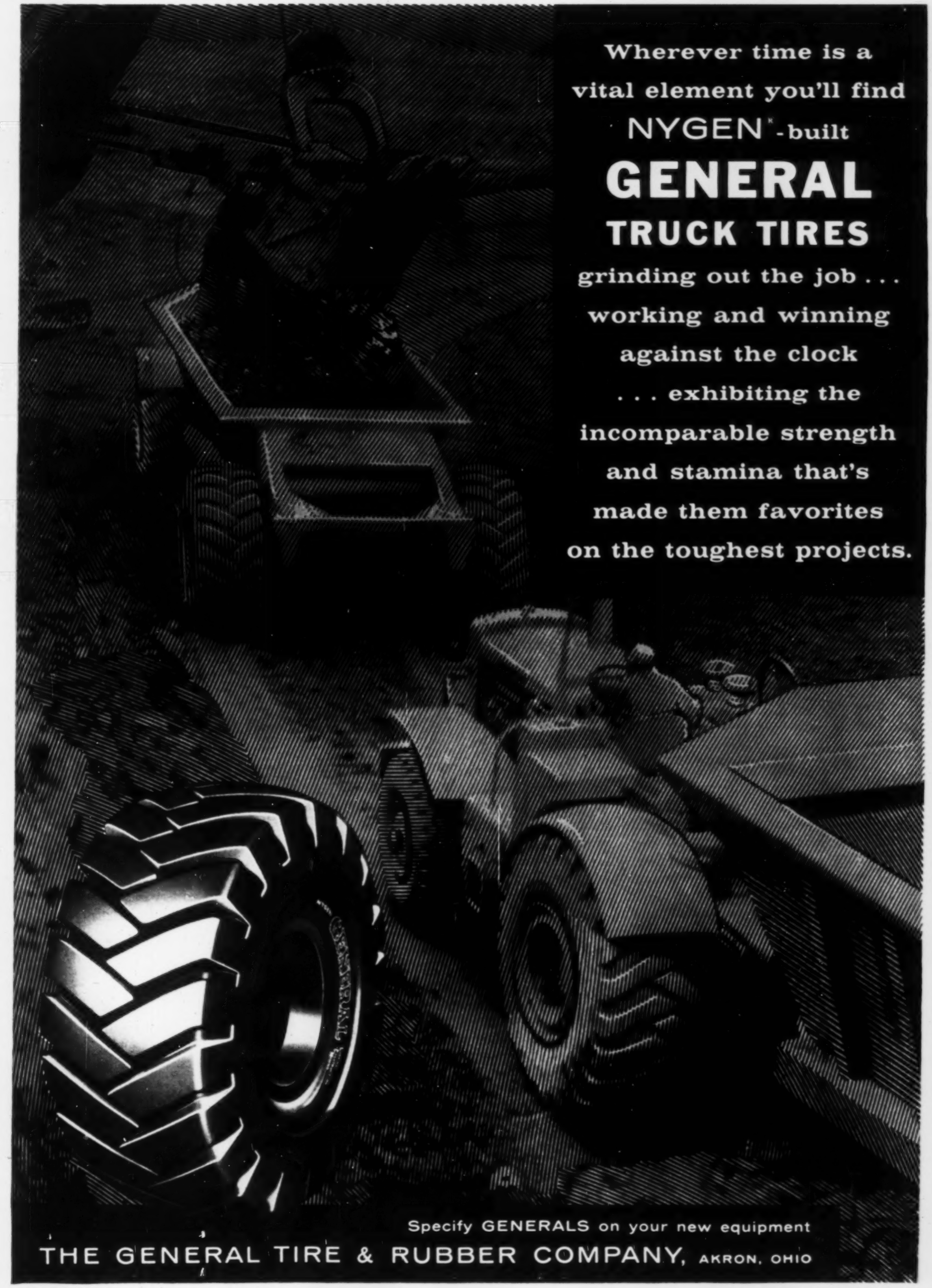
The performance of this panel was tested under static load equivalent to a wind in excess of 160 mph. After applying a uniformly distributed load of over 100 lb per sq ft—five times the design load—the 13-ft, 4-in.-long test panel deflected only ¼ in. The test was discontinued at this point since it proved the panel structurally safe.

The panel weighed about 30 lb per sq ft and had an over-all U factor of 0.14. Flashing raglets, inserts for attachment of the marble facing, and inserts to receive lifting eyes were cast into the concrete to facilitate erection.

The 89 caissons were drilled, belled and filled with concrete in three months. The structural steel was erected in four months.

Bank Building: Vital Statistics . . .

Plan Dimensions: 281x131 ft.
Height (above street level): 232 ft.
Typical floor area: 36,000 sq ft gross; 28,000 sq ft usable.
Total floor area: 600,000 sq ft gross; 420,000 sq ft usable.
Story height: 14 ft.
Floors: Cellular steel, with 2½ in. concrete topping.
Fireproofing: 1 in. vermiculite plaster.
Exterior walls: Marble-faced precast insulated lightweight sandwich panels; insulated umber porcelain-enameled metal panels and reversible windows in stainless steel frames.
Hydrostatic uplift: 1,800 to 2,500 psf.
Caissons:
  Total number: 89.
  Diameter: 3 ft to 6.5 ft.
  Bell diameter (maximum): 10.5 ft.
  Allowable bearing pressures: 15 to 25 tons per sq ft.
Shoring: Steel Soldier beams and timber sheeting.
Structural steel framework: 6,000 tons.
Column spacing, each way: 25 ft c-c
Contractors:
  General Contract: Bryant & Detwiler Co., Detroit. Const. Supt., Roy Hebert.
  Caissons: Case Foundation Co., Chicago. Const. Supt., Rene Belio.
  Excavation shoring: Spencer, White & Prentis, Inc., New York City. Const. Supt., Jim Burns.
  Structural steel: Bethlehem Steel Co., Bethlehem, Pa. Const. Supt., Clarence W. Lawman.
Architects and Engineers: Albert Kahn Associated Architects and Engineers, Detroit. Supt., Gerald E. Hebert.
Completion date: Mid-1959



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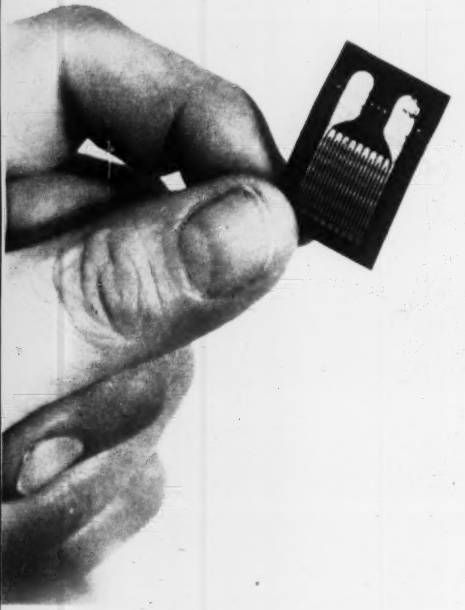
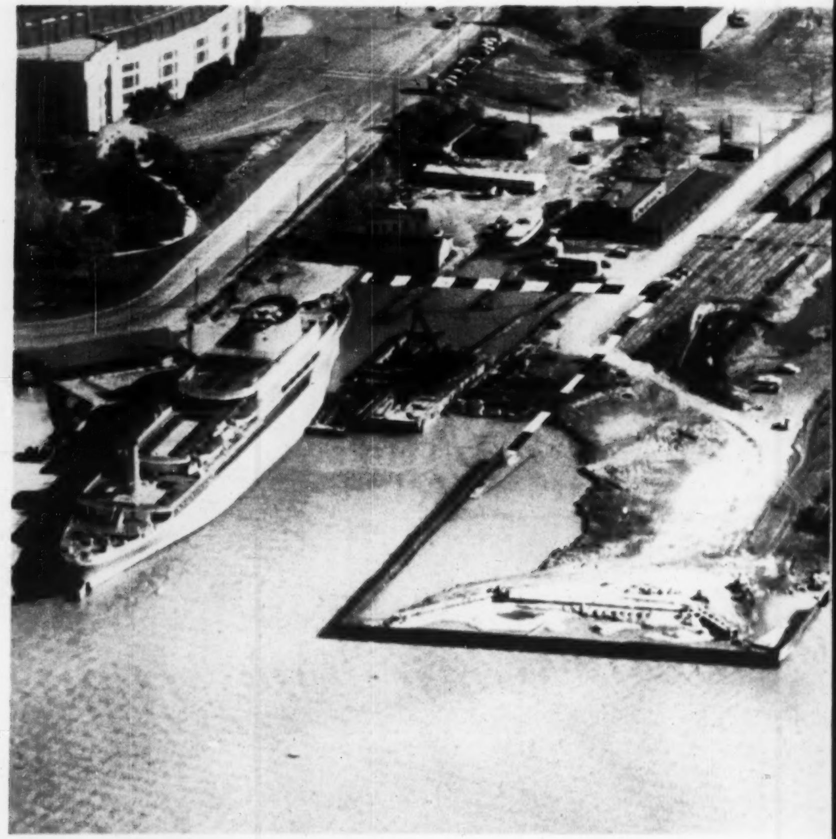


Tiny resistance units will . . .



provide valuable sub-surface data when used on pier being

Little Strain Gages May Mean

Resistance type strain gages, long regarded as indispensable in many fields of science and industry, may soon help engineers to design more economical and effective steel sheetpile installations. Tests being conducted by researchers from Case Institute of Technology on a pier now under construction in Lake Erie will tell the story.

To the extent that they are successful, the tests will provide valuable information on sub-surface soil behavior and its effect on steel sheetpiles.

Allowances are being made for a certain percentage of failures because of damage to individual gages during the driving.

From the undamaged gages, however, will come information that could result in annual savings of millions of dollars on waterfront construction projects.

The tests are being made on the West Sixth Street Pier in Cleveland. The structure is almost rectangular in shape—roughly 300 ft wide and 650 ft long. One end is land-based, the other three sides are formed by 60- and 70-ft MZ-38 steel sheetpiling. This three sided box projects almost 600 ft into Lake Erie in water that will be dredged to a depth of 27 ft. At the end of the pier the sheets are anchored to battered, cast-in-place deadman piles by 2½-in. tie rods equipped with turnbuckles. The remainder of the sheets are anchored by 3-in. tie rods running from one wall to the other. The inside of the structure will be filled with selected material, and the surface course will be gravel sloped to the sides.

The geology of the lake bottom at Cleveland is not unusual, but it does present many problems to the designers of waterfront installations. At the location of the West Sixth Street Pier, the water depth varies to a maximum of 16 ft. Beneath this is 4 to 8 ft. of river silt, then 4 to 6 ft of sand overlying 40 to 65 ft of soft grey clay. Hard clay is not encountered in the off-shore areas higher than 75 ft below the surface of the lake. Shale is 90 to 100 ft below the water level.

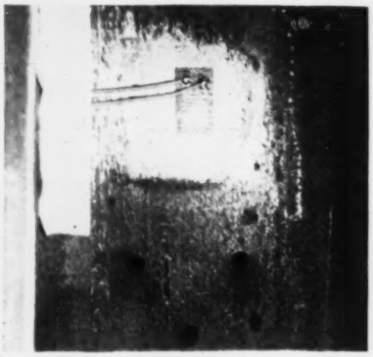
In the initial planning of the pier it was thought that the sheeting would have to be driven all the way down to the stiff clay, and possibly even to the shale. The cost, however, was prohibitive. The expense for extremely long sheets coupled with the tremendous labor and equipment costs for handling and driving them pushed the total construction figure far beyond the funds available.

Because the city intends to build other piers on which considerations will be similar, and because of the unique opportunity to instrument an actual structure to obtain engineering data, Case Institute of Technology agreed to provide funds for the instrumentation expenses. Merritt-Chapman & Scott Corp., the builders, agreed to cooperate. The designer, Osborn Engineering Co. of Cleveland, retained as a consultant Prof. Harry Nara, head of the Civil Engineering School of Case Institute.

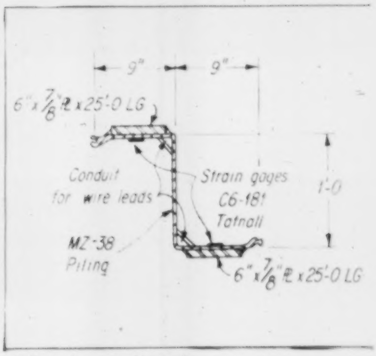
From studies by Osborn, Professor Nara, and an assistant, Robert Eiber, plans for the pier and for the tests were evolved. The 60- and 70-ft-long interlocking sheets were deemed adequate, provided the 70-ft sheets were reinforced. The reinforcement consists of ⅞-in.-thick plate 25 ft long and 6 in.

built in Cleveland.

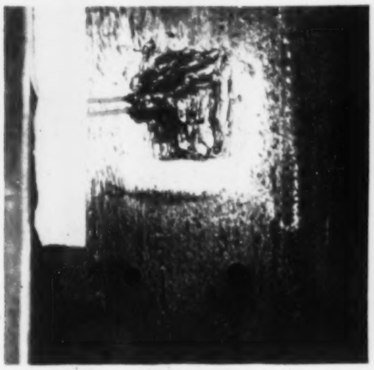
Here's How It's Done...



Gages are cemented to sheetpiles . . .



at locations indicated . . .



then covered with epoxy resin . . .

and protected by steel plates.

Big Savings in Bulkhead Design

wide. These plates are welded to sheet faces adjacent to the interlock and extend from a point 27 ft above the toe of the sheets to a point 18 ft below the head of the sheet.

Before they were driven, eight of the sheets were equipped with resistance type (electrical) strain gages set at 5-ft intervals along the entire length of each sheet.

The gages used are postage stamp size—half an inch wide and one inch long. They are stamped from delicate, thin metallic foil to form 10 extremely fine hairpin-shaped loops, each parallel to the others. At the two terminals of the outside loops the foil widens to permit attachment of instrument wires by soldering.

The gages are attached to the sheets by contact cement. Lead wires are soldered to the gage terminals and brought to the top of the sheet within an enclosure formed by a plate welded diagonally across the internal corners of the sheet. The strain gage is then waterproofed with an epoxy resin and covered by a machined, wedge-shaped clearance plate that is bolted and welded to the sheet. This plate protects the gage from contact with the soil while the sheet is being driven. The gap between the plate and the sheet is then filled with a tar compound, and the sheet is ready for installation.

The operating principle of the gage is simple. It's based on the resistance offered by the gage to passage of an electric current. The gage has a known resistance to a given amount of current when no load is acting on the material to which the gage is attached. The slightest change in load will produce a measurable change in the resistance of the gage. Thus, any bending of the sheets to which the gages are attached will be reflected in the instrument readings.

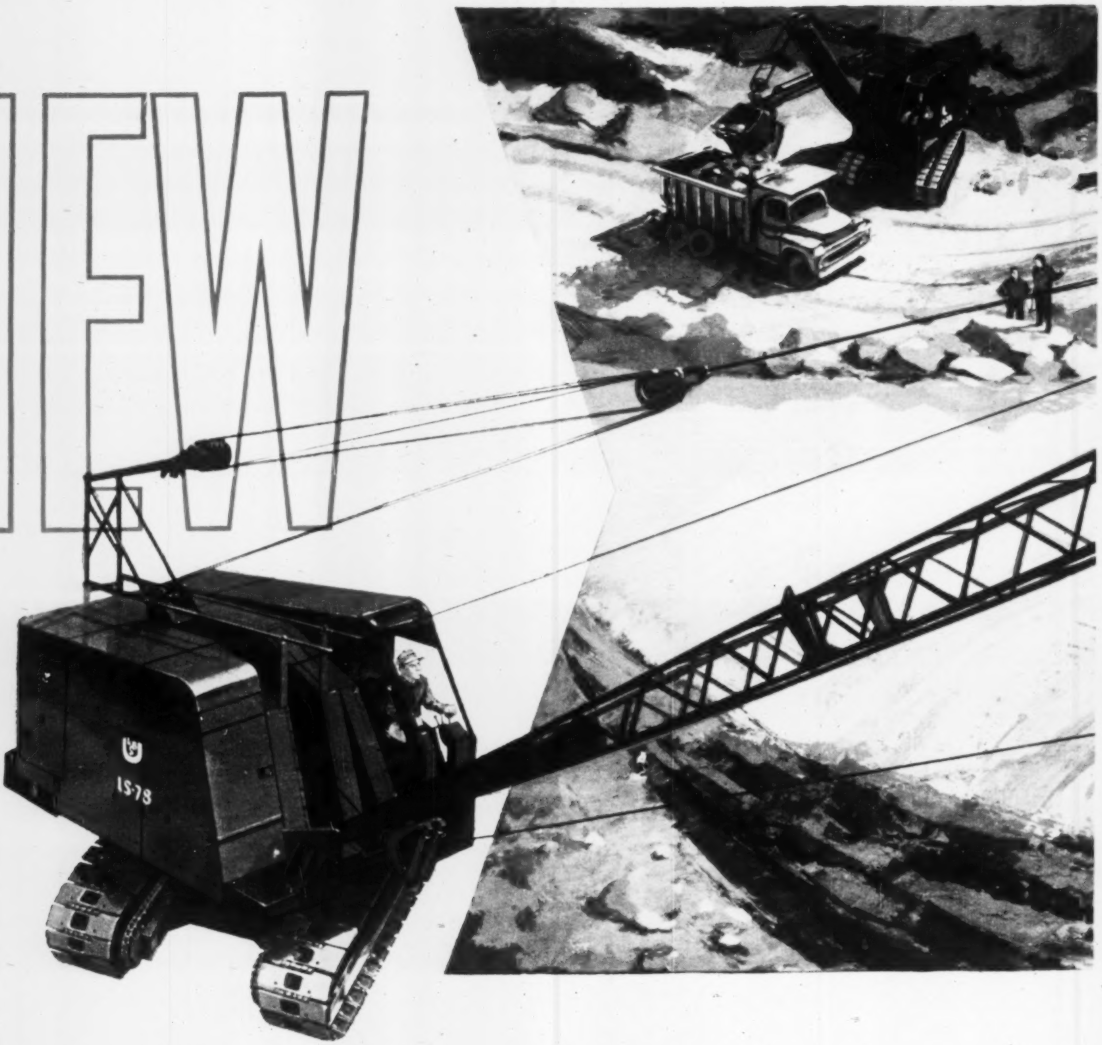
By correlating the indicated bending of the sheets with their known properties, researchers can accurately determine the stress in the sheets caused by the action of the various strata beneath the surface.

Not known as yet, are the actual forces that will be exerted on the sheets in the pier and how they may change with time. However, the walls have been designed to withstand pressure of from 300 to 500 psf. The designed strength of the walls is consistent with current engineering practice, but whether this represents an over-design, only the gages can tell.

During the next year, Case Institute researchers will make periodic checks using electronic instruments to record the strain gage information. From this information it will be possible to determine with considerable accuracy whether the wall is over-designed. It will also be possible to design future structures to be built in similar soil with great economy at no sacrifice of safety.

Professor Nara says the geological structure of the lake bottom is fairly uniform throughout this section of the lakefront. This being the case, the results of the tests on the Sixth Street Pier may well have great impact on the design of all other piers to be built by the city in this area. They may also set a test pattern that will be followed by other port cities interested in obtaining good waterfront installations at a minimum cost.

NEW



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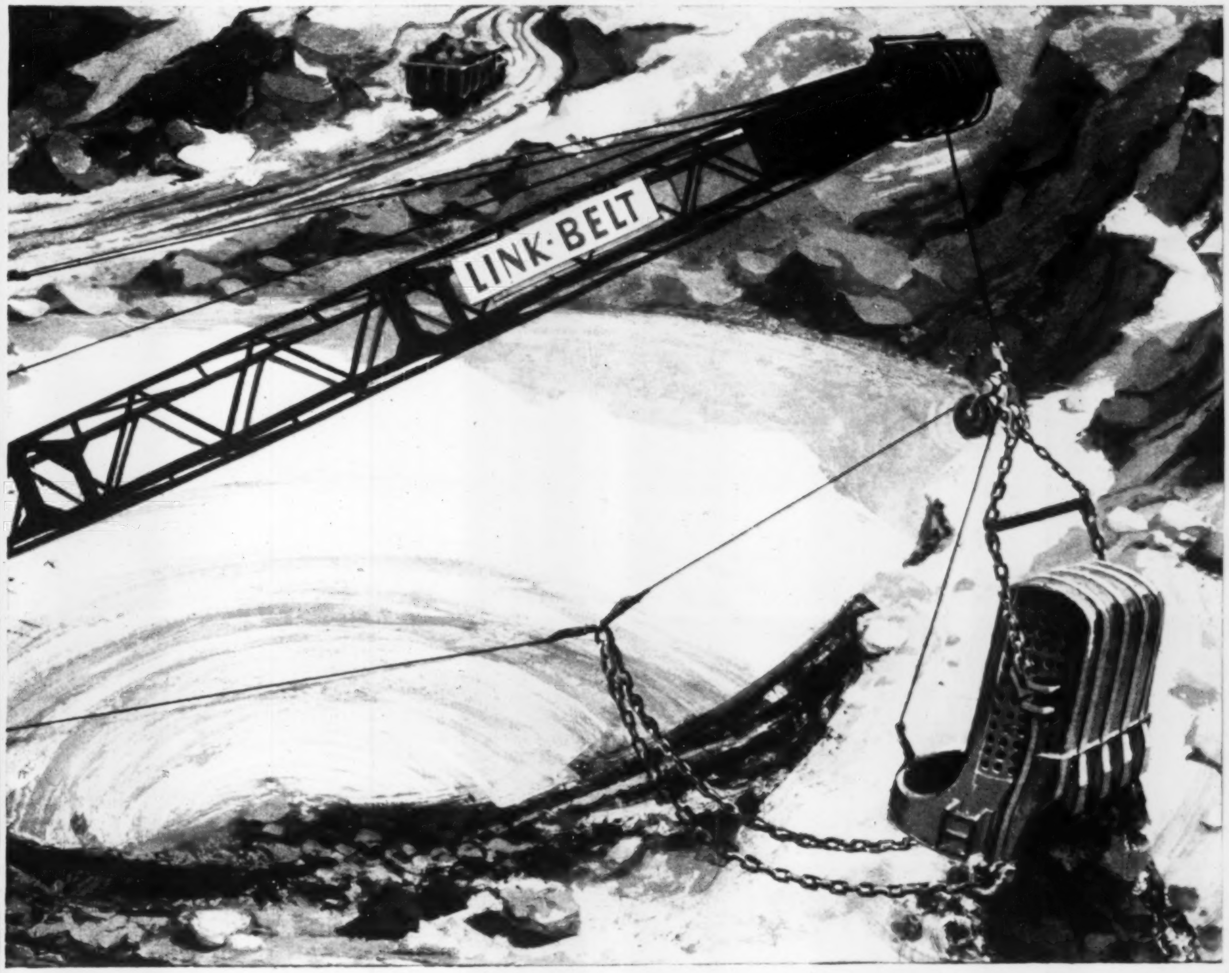

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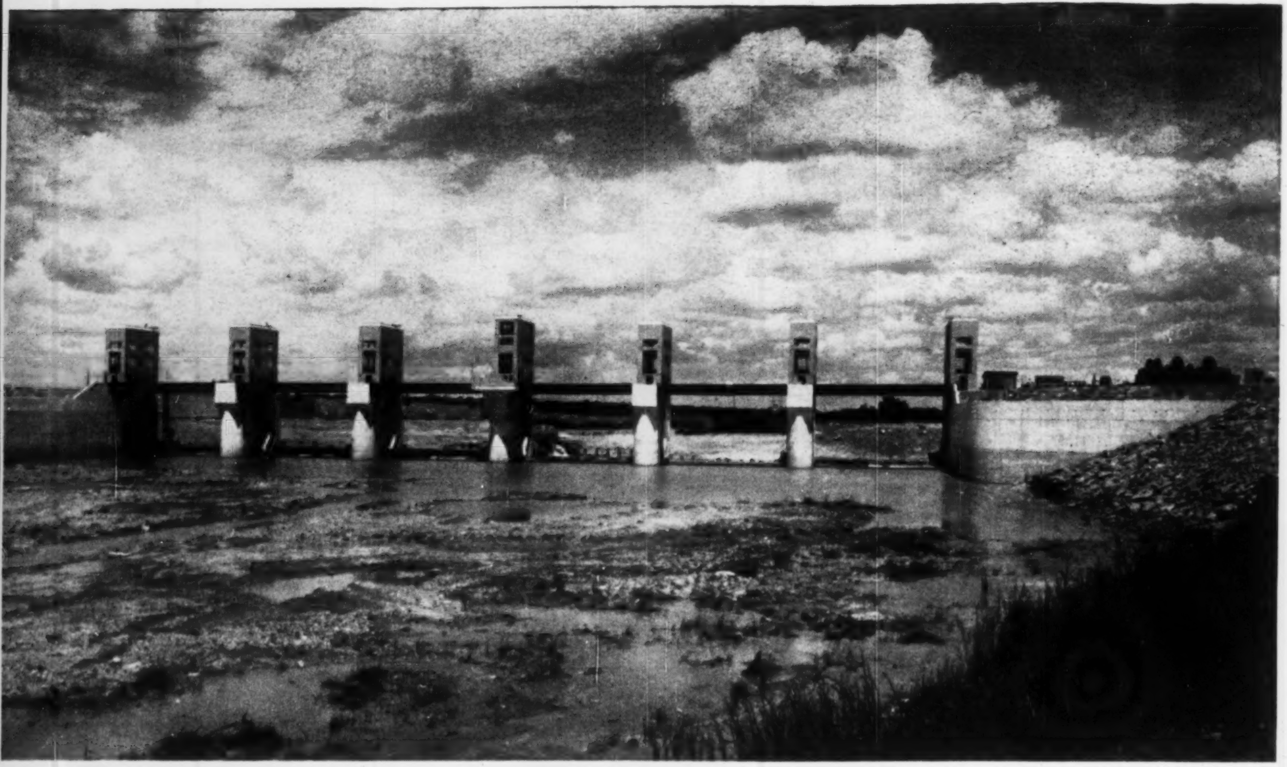
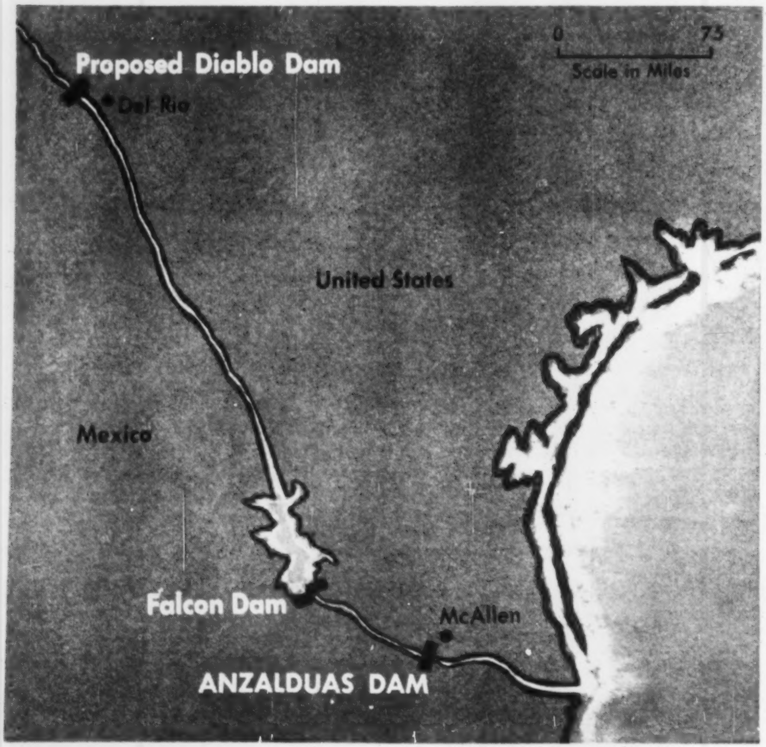


Anzalduas Dam . . .

New Shield Against Rio Grande Floods



New dam diverts flood water spilled from Falcon Dam upstream.

Roller gate installation is now under way on a new dam across the Lower Rio Grande near McAllen, Tex. It will provide additional flood protection for the rich agricultural lands and the thriving string of cities that extend from this point downstream to Brownsville.

Named Anzalduas—an old Spanish family name in the area—the dam will serve primarily as a diversion structure to direct excessive flood waters, spilled by Falcon Dam some 65 miles upstream, into the existing Mission Floodway, and from there to the Gulf of Mexico. It is a project of the International Boundary and Water Commission, U. S. and Mexico, and is a joint undertaking of the two countries.

When Falcon Dam was completed about five years ago by the same agency (ENR May 15, 1952, p. 62), the lower valley was for the first time given a reprieve from the twin threats of flood and water famine.

Falcon's reservoir provides 2.1 million acre-ft of conservation storage and 1.7 million acre-ft of flood storage, but the latter is not enough to cope with the worst floods.

(Story continued p. 60)

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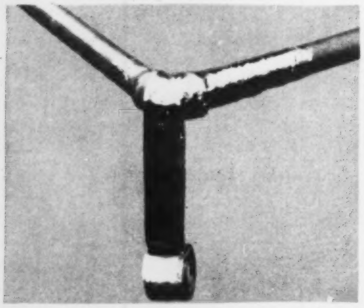

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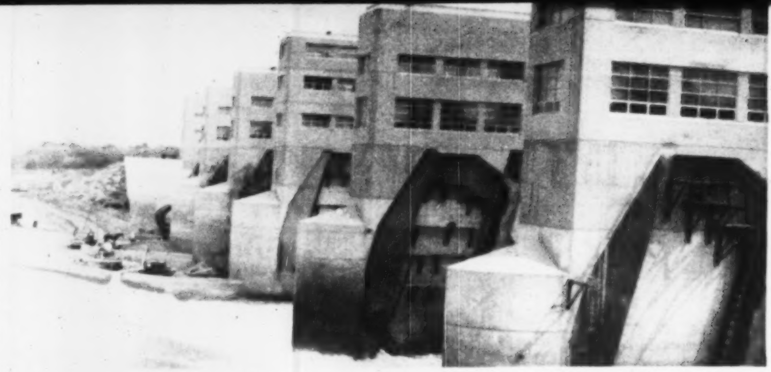
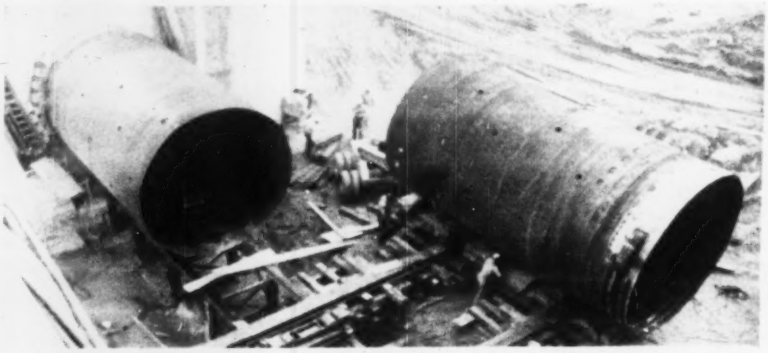


Concrete cofferdam is almost overtopped by high water while . . .



. . . behind it, unit for the 75-ft-long gate is rolled into place.

(The proposed Diablo Dam 250 miles farther upstream, which President Eisenhower discussed recently with President Adolfo Mateos of Mexico, would provide additional storage, but perhaps not enough and not for a number of years.)

Anzalduas Dam was, therefore, planned to divert the water, which could not be carried by the Rio Grande channel, into the floodway on the U. S. side. It will also divert water into Mexico's Anzalduas irrigation canal, which takes off just upstream and serves 460,000 acres of Mexico farmland. With its gates down, Anzalduas Dam can also provide about 4,000 acre-ft of storage.

Anzalduas Dam is 524 ft long across the river channel, where it consists of seven high concrete piers carrying six roller gates. It also contains a mile-long, rock-faced earth dike on the U. S. side. The gates—steel cylinders, 75 ft long and 14 ft in diameter—will roll up and down cogged tracks in the sides of the piers. Each gate has a 7-ft apron.

Hoisting machinery, with a main gear over 10 ft in diameter, is installed on each pier, and its necessary housing gives these structures an imposing appearance. Controls for all the gates are in the house on the center pier.

The two roller gates at each end of the structure will be operated as sluice gates. A stilling basin some 200 ft long below the gates is designed to contain the hydraulic jump within the structure.

Both ordinary and flood flows of the river will be funneled through the structure by means of training levees and dikes located across the flood plains on each side of the river. To stabilize the approach channel to the dam, quarry-run rip-rap is placed from the dam upstream—2,625 ft in Mexico and 4,920 ft in the U. S.

For constructing the dam, the two governments agreed on a division of the work—Mexico to place all the concrete and the U. S. to install the gates and machinery and construct the dike.

Dodds and Wedegartner, Inc., San Benito, Tex., has the construction contract, while the gate work is done by the Donovan Construction Co., St. Paul, Minn. The gates were fabricated by Hahn & Clay, Houston.

The Mexican contractor was Ingenerios Civiles Asociados, Mexico City. Lockwood, Andrews & Newman, Houston, were consultants for the IBWC.

For the U. S. section of the commission, L. H. Hewitt, a commissioner, is contracting officer and Robert F. Bickel is resident engineer. For the Mexican section, Commissioner David Herrera Jordan is contracting officer and Carlo Molina Rodriguez is resident engineer.

Anzalduas Dam was begun in 1956 for completion in 1960. Before 1960, rehabilitation of the inlets to the Mission and Hackney Lake floodways (the latter just below the dam) will be carried out and about eight miles of new river levee will be constructed from Mission inlet upstream.

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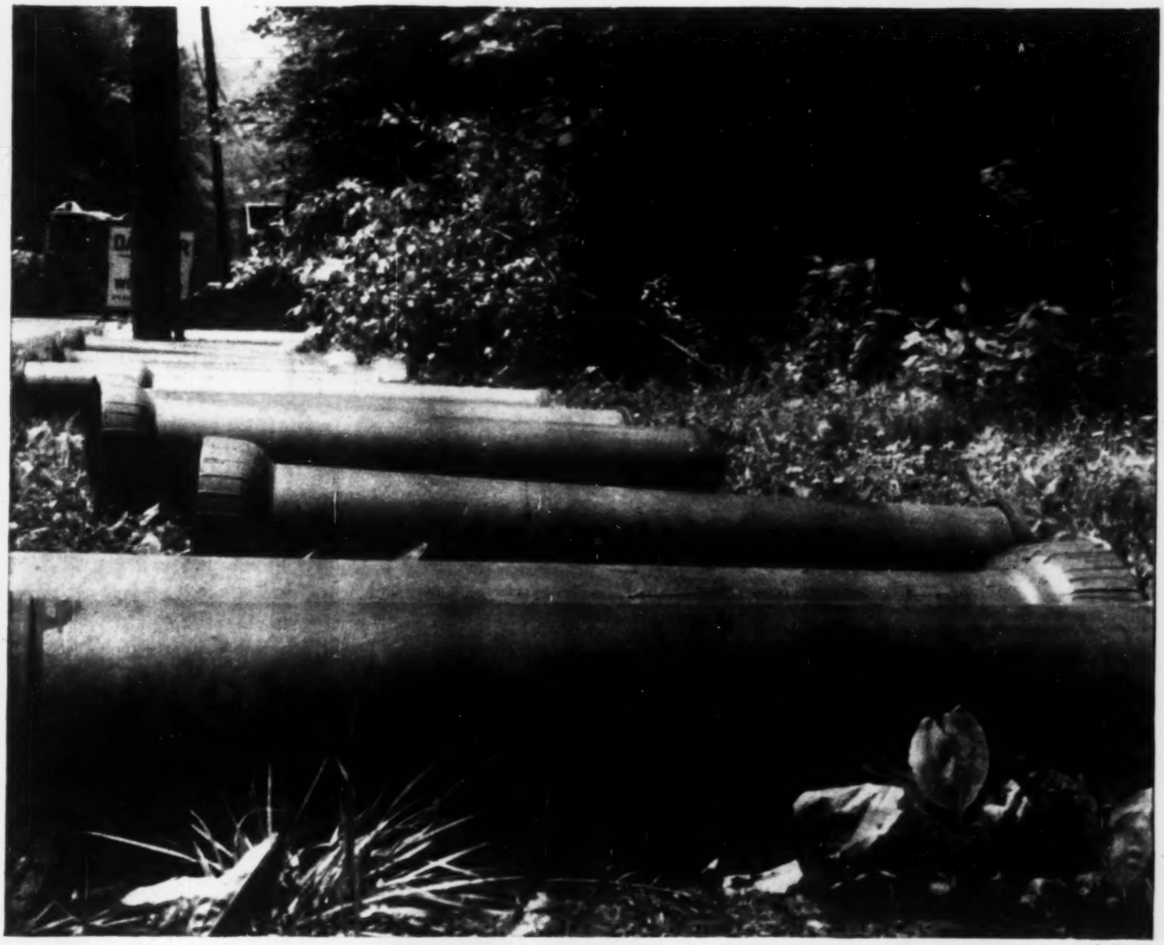
The Clay Pipe Industry now offers you the fastest joints ever developed. They're factory-made and ready to install . . . with less manpower than ever before. But that's not all! The Clay Pipe itself now comes in new longer, *stronger* lengths to make installation even faster. For years Clay Pipe has been recognized as the world's longest-lasting pipe. And now it's the fastest and easiest to install! For further details about this revolutionary new development, write the NCPMI office nearest you.



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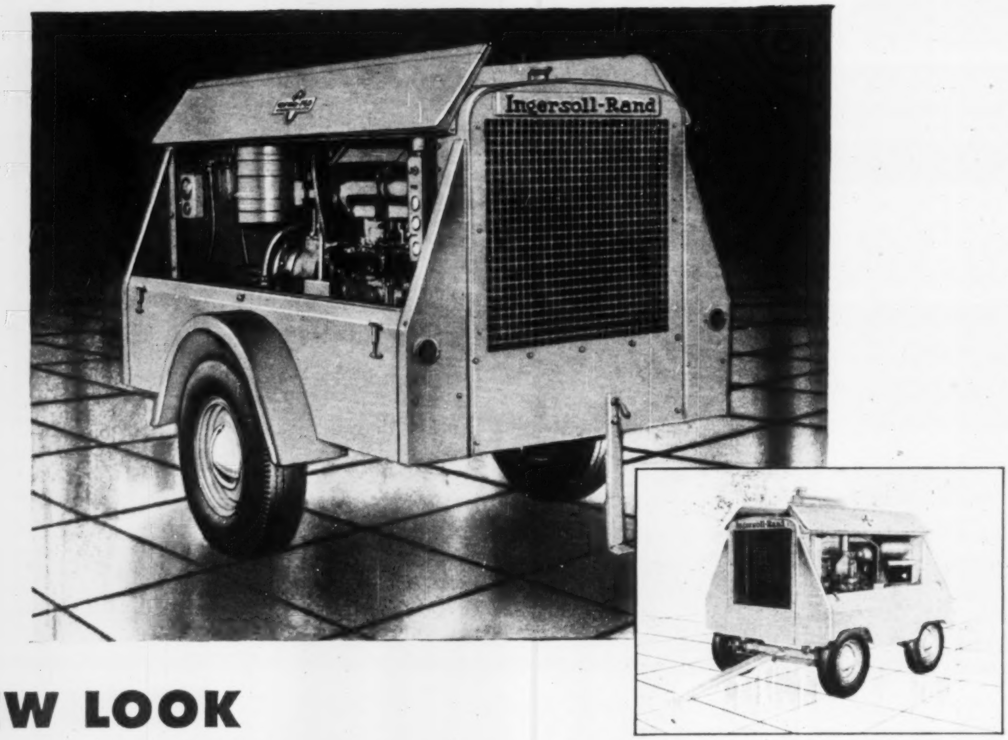

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Ingersoll-Rand, the pioneer builder of portable rotary compressors, now offers a new size Gyro-Flo—the R-250 with a completely new, simplified compressor system.

The new Gyro-Flo 250 offers nearly 20% more capacity in a unit that is smaller and more compact than its predecessor—the Gyro-Flo 210. It is driven by larger, more-powerful engines—yet retains the same 1800 rpm engine speed. Fuel and air tanks are under housing and lockable cover...Full-length tool boxes give more storage space...There's provision for easy inspection of all rotor vanes...Side covers fold back safely out-of-way...And 12-volt battery system permits fast starting. These are just a few of the features of the new R-250.

The Gyro-Flo 250 gives you a choice of two compressor-matched drives—the *new* General Motors 4-53 diesel engine or the Continental M-363 gasoline engine. Available with 2- or 4-wheel mounting, or without running-gear. Ask your Ingersoll-Rand representative for complete information, or send today for Bulletin 2931.

DIMENSIONS AND WEIGHT

4-Wheel Mounting	**G.**	**D.**
Weight (wet)	4425	4610
Length (less drawbar)	8'-10½"	8'-10½"
Width	5'-9½"	5'-9½"
Height	6'-1"	6'8⅝"
2-Wheel Mounting		
Weight (wet)	4390	4575
Length (incl. dr'wbar)	12'-5"	12'-5"
Width	5'-11"	5'-11"
Height	6'-0⅝"	6'-8½"
Less Running Gear (Incl. Shipping Skid)		
Weight (wet)	3879	4064
Length	7'-8½"	7'-8½"
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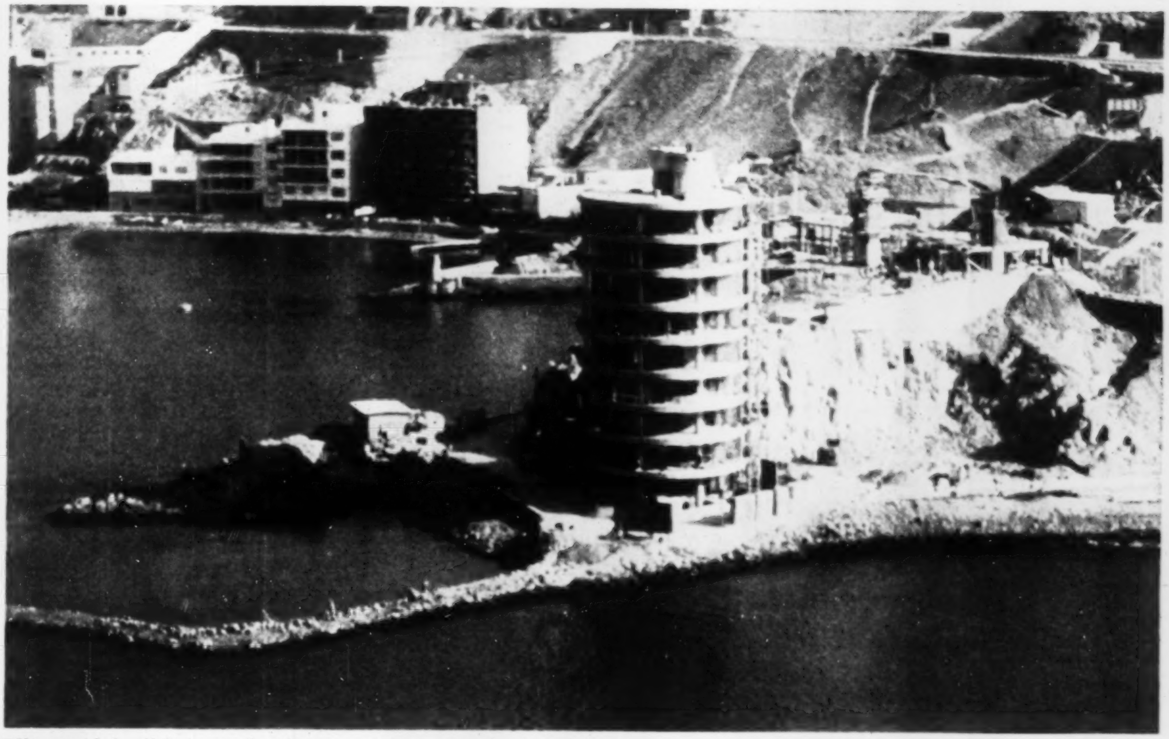
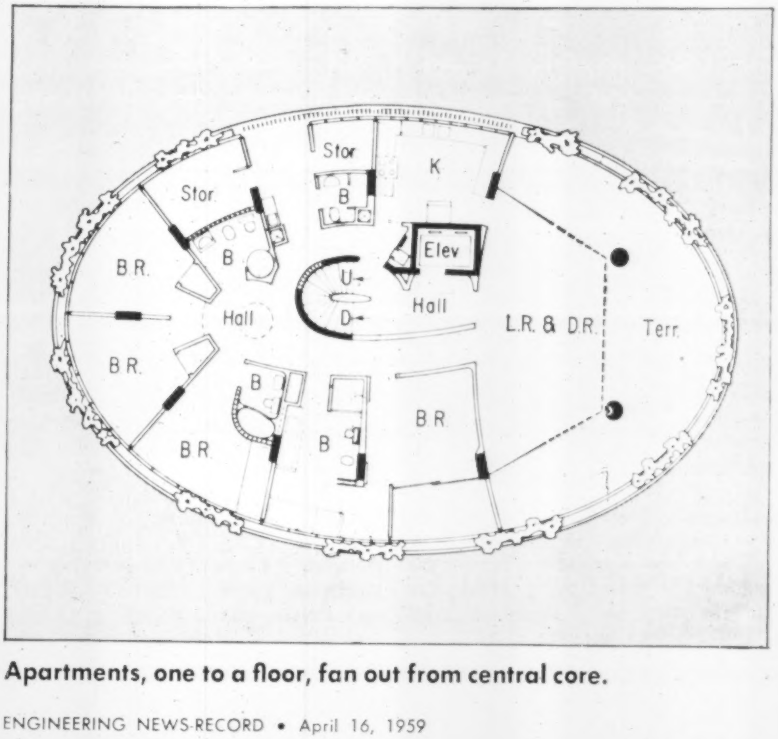


Elliptical building is laid out with a third of each floor open toward the sea.

Peruvian Apartments in the Round



Peruvian builders have completed a luxurious, eight-story elliptical apartment building on the Pacific coast at Ancon, a resort 30 miles south of Lima.

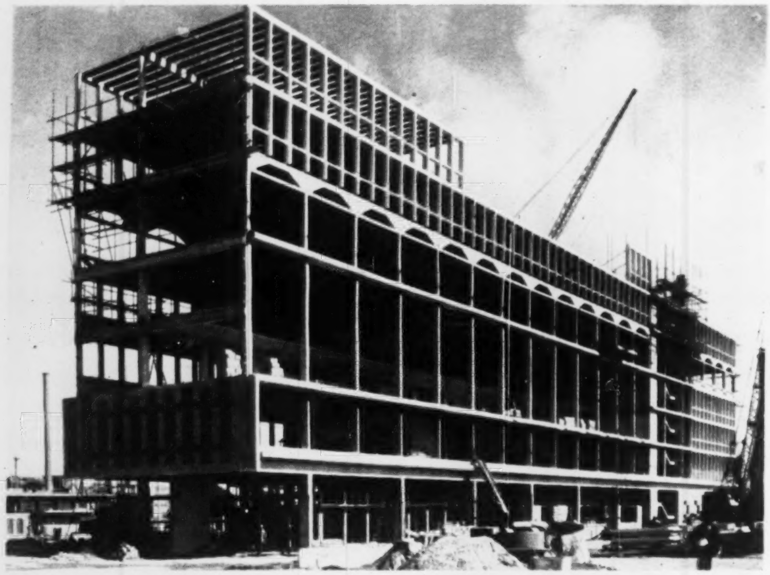
Perched on a small cape named "La Punfilla," the development even includes a 100-yd-long breakwater—protection for tenants' yachts.

The 87-ft-high structure is built of reinforced concrete resting on foundations in rock. Elliptical floors are 44 ft wide and 70 ft long. At each level, the floor framing fans out from a core composed of stairwell, landing and elevator shaft. Eleven columns, set in from the building edge 6 to 10 ft, support the floors. Reinforced concrete shear walls around the stairwell and elevator shaft stiffen the building laterally.

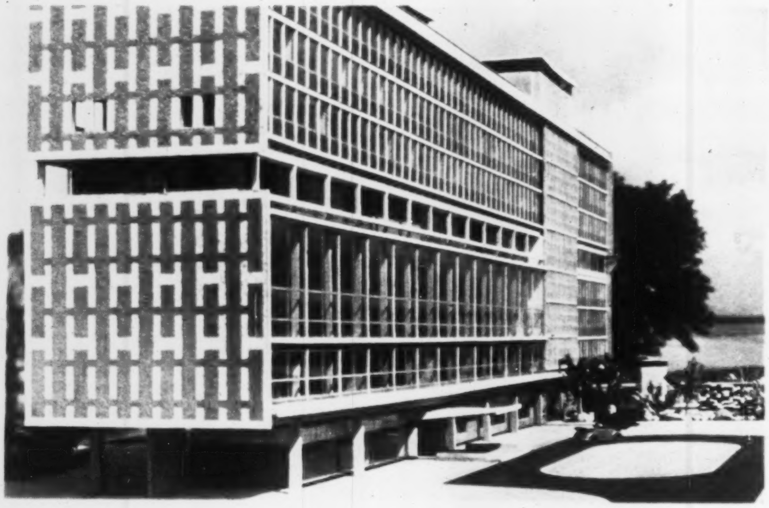
The $270,000 building is air conditioned. Floor slabs are insulated and gas heat is used during cold weather.

Peruvian architect Alberto Menacho designed the structure. Aurelio Rodrigo was engineer in charge for the general contractor, Empresa Constructora of Ancon.

(*International continued p. 64*)



Precast, Prestressed Concrete . . .



Frames This English Building

A new administrative office building for Shell Refining Co., Ltd., has been constructed of precast concrete from the ground up at Stanlow, in northwest England.

At a cost of $1.96 million, the company got 100,000 sq ft of space on eight floors in the 100-ft-high building.

Two core areas, on opposite sides of the structure, serve the building. They each contain stairwells, toilets and two elevators; their cross walls brace the building. Building floors, acting as large flat girders, pass wind loads to these core walls and to rib walls just inside the ends of the 40 x 285-ft building. The stiffening wall sections are the only cast-in-place concrete in the structure.

• Composite floors—The floors consist of prestressed concrete inverted T-beams with web tops notched for bond with a cast-in-place floor topping. The beams are 8 in. deep and 2 ft, 4½ in. wide, laid with flanges touching.

Workers placed corrugated asbestos-cement boards, used as permanent forms, in continuous rebates along the upper edges of the T-beams. Concrete topping, 2 in. deep, went on the boards. The result is a combination box-girder floor structure, duct system and wearing surface all in one.

The floor units rest on exterior wall beams and on an offset center girder that runs the length of the building, 16 ft in from one side. Inside, this offset girder also carries one wall of the central corridor. Along the outside, spandrel beams carry precast wall frames and the ends of the floor beams.

Two mullions with precast head and sill beams form one 4-ft, 9-in. modular unit. Concrete panels with exposed granite aggregate extend from floor to sill; double-glazed windows pivot between sill and head beam. Each mullion contains a recess at the bottom for either power of telephone outlets. Main leads run from the cores along the central corridor; branch lines can be laid from this corridor at any point to offices on either side of the building.

A partial clerestory between the third and fifth floors forms an exhibition hall on one side of the building. Engineers stiffened the structure at this point with a cast-in-place balcony running along the interior side of the room at the fourth floor.

• Expansion—The architects planned the building for a possible 25% expansion. Extending the building will only involve removing the precast end-wall panels and adding bays to the existing framing.

Hot air for heating rises through ducts in the two core areas and corridor ceilings to registers in individual offices on each side of the building. Low-level returns feed air back through the corridor walls to return ducts. The system provides a complete change of air every two hours. Hot-water radiators hang from exterior-wall sills to prevent heat loss and to maintain proper temperature at night and over weekends.

Concrete-block partitions are used throughout the building for two reasons: The architects believe it would be easier to move personnel than partitions; and in their opinion, permanent block walls are cheaper and provide better soundproofing than movable wall sections.

Grenfell Baines & Hargreaves are the architects; the structural engineers are Felix J. Samuely & Partners. A. Monk Co., Ltd., is the general contractor. Pierhead Ltd. produced the prestressed-concrete floor units. Precast wall frames were supplied by George Greenwood & Sons. Forticrete, Ltd., made the exposed-aggregate wall panels.

(*International continued p. 66*)

David J. Moodie, master mechanic, J. A. Thompson & Son, Inc., Inglewood, Calif.

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Dave Moodie's report is typical – Union lubricants are extending the life and improving the performance of thousands of pieces of construction equipment every day in every part of America and overseas. Try Union Oil products in *your* equipment and you'll see why so many of the nation's most important contractors use them *exclusively*. Ask your Union Oil Company representative for specific lubrication recommendations on any type of equipment or write to Manager of Direct Sales.

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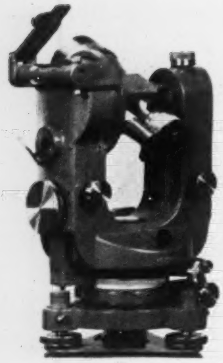

British Theodolite available in America

An Optical Micrometer Theodolite, from Cooke, Troughton & Simms Ltd., Britain's oldest maker of surveying instruments, has been introduced in the United States.

The 9-lb. Model V308 can be read directly to 20 sec. of arc and by estimation to 5 sec. The instrument features brilliance of field of its circle-reading microscope, high magnification of the graduation system and easy reading. The telescope is of the internal-focusing type with a spiral focusing eyepiece.

The V308, complete with spirit levels, optical plummet, centering device and either telescopic or non-telescopic tripod, is packed in a lightweight case.

V308 is a companion to the famed Tavistock Theodolite. Write for information on both.

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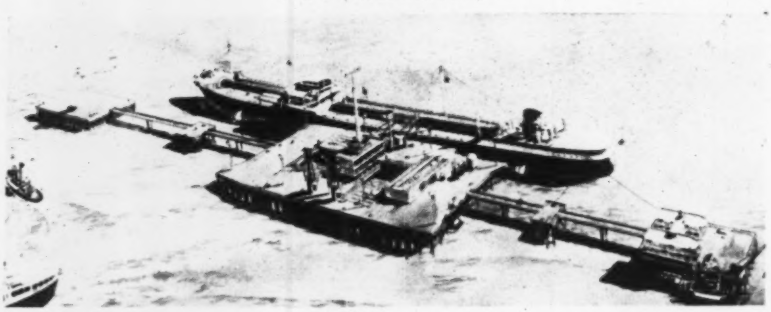

Persian Gulf to Get New Island

A three-company venture will construct a deep-water tanker terminal in the Persian Gulf, 24 miles off the coast of Iraq, for Basrah Petroleum Co.

The terminal, capable of accommodating two 65,000-ton tankers simultaneously, will be built south of Fao, near the mouth of the Shatt-al-Arab River.

The participating firms are De Long (Overseas) Ltd., Raymond International (U. K.) Ltd. and Richard Costain (U. K.) Ltd., all of London. Raymond is the sponsoring firm.

The artificial island will consist of five platforms. The largest of these will be 400 ft long and 280 ft wide. At each end of this platform a catwalk will connect with a 38-ft-sq mooring platform and, farther out, a larger platform. It's over-all length will be about 1,200 ft.

At the beginning of the project, the two end units will be De Long mobile working platforms. One will carry living quarters and a concrete plant. The other will carry a pile hammer and other equipment. When the job is completed, the tow floats will become permanent parts of the terminal. One will continue to support living quarters and the other will become a heliport.

De Long recently began construction of the mobile platforms in England. They will measure 125 ft x 80 ft and 100 ft x 80 ft. Before they leave for the Persian Gulf they will be welded together to form a 225-ft barge. Living quarters, a three-story building equipped with air conditioning and an elevator, will be built in England.

The combination platform, fitted with caissons, jacks and construction materials and equipment, will be towed through the Mediterranean Sea and the Suez Canal and up the Persian Gulf. The trip will take 70 to 80 days. The platforms will be separated on arrival.

Some 400 piles will support the middle three platforms of the terminal. These will be reinforced concrete hexagonal piles, 16 in. face to face, and pipe piles of 30-in. diameter.

Most of the materials will have to be shipped from England to Basrah and then transshipped to Fao, shore base for the project.

Because of the space limitations of the work platforms, as much as of the work as possible will be fabricated on shore. The venture will have a crew of 125 men at the construction site and an equal number on shore.

The terminal will take about 18 months to build. Work will be hampered by two- and three-day sandstorms from the deserts in the northwest and sudden hurricanes from the Persian Gulf.

Two 32-in. submarine pipelines will link the terminal with a new pump house at Fao, the present oil port. These lines, to be laid by Collins Submarine Pipelines Overseas Ltd., London, will enable the terminal to load tankers at the rate of 8,000 tons an hour.

William H. Casey, of Raymond, will be project manager in New York. Claude Davis, also of Raymond, will serve as construction manager in the field.

Jet Facilities Designed For Pakistani Airport

The design of jet aircraft facilities for the Civil Airport at Karachi, Pakistan, has been completed by Kuljian Corp. of Philadelphia and Associated Consulting Engineers Ltd., Karachi.

The project includes a new jet runway, 10,500 ft long, with supporting taxiways, holding aprons and a terminal apron. It is designed for commercial jet airliners that have a total takeoff weight of 300,000 lb.

The runway will be of concrete, 12 in. deep at the center and 14 in. at both ends, the taxiways and the parking aprons.

Other facilities included in the plan will be high-speed runway turn-offs and reinforced concrete jet-blast fencing.

The jet facilities are scheduled for completion early next year.

(*International continued p. 68*)

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Firestone Off-The-Highway Tires are cutting hourly costs on the roughest jobs in the business! That's because every Firestone Tire is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! Tough Firestone treads and sidewalls defy cuts in rubble and shale. Exclusive Firestone S/F (Shock-Fortified) nylon bodies resist damage from bruising shock and impacts. And job-engineered tread designs always give the traction you need under any operating condition. Call your Firestone Dealer or Store and ask him about Firestone's full line of tubeless and tubed off-the-highway tires and on-the-job tire service.

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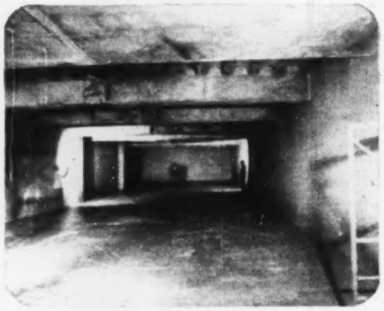

Poured concrete rooms, two and three floors below basement level, were designed to house supplies of fresh water and fuel oil in the operation of the Habana Hilton in Cuba.

Although the masonry in these storage rooms was structurally sound, it was equally imperative that they be leakproof.

The THORO System materials were employed to seal the concrete structure of these unique rooms against leakage.

WATERPLUG, famous for its ability to stop leaks instantly, was applied to the joints where walls, floor and ceiling met and to anchor pipe and conduit fixtures.

THORITE, a twenty-minute set patching compound, was troweled into the honeycombing of the masonry.

THOROSET, ingredient for hardening and waterproofing concrete was used in the mixture of a cement compound for trowel-coating over all surfaces.

THOROSEAL, applied in two heavy brush coats, sealed the masonry from all possible leakage.

THOROBOND, applied to the extra smooth sections of the poured masonry, made it possible to bond both **THOROSET** and **THOROSEAL** to the surface.

P & W Floor Hardener gave floors extremely hard wearing surface.

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NEW EAGLE, PA. CENTERVILLE, IND.

New Road Fails

Frost-caused cracks close British Superhighway

Britain's first limited-access highway opened—and closed down 48 days later. Frost had caused cracks and spalls in the surface.

Repairs have been made and the road has been reopened.

Some 15 to 20 patches of damage—totaling 3,000 sq yd—developed on the eight-mile superhighway. The $10.5 million road—a bypass for Preston in Lancashire County—was closed for repairs.

Reason for the damage: Bad weather prevented the macadam and "temporary" asphalt surface from drying out; says James Drake, county chief surveyor. This left the pavement vulnerable to frost damage.

Water seeped into the highway foundation. There it froze and pushed up the finish. Then along came a thaw that allowed the macadam to subside—breaking and distorting the surface, Mr. Drake says. The cracks ran about three inches deep.

The cracks have been patched and better drainage is being installed.

The highway has a 12- to 36-in. sub base of shale. Over this are 9 in. of water-bound macadam. Then comes a $2\frac{1}{2}$-in. tarmacadam base course. This is topped with a $\frac{3}{4}$-in. coat of cold asphalt with granite chips embedded.

The road was laid to Ministry of Transport specifications, using a new process developed by Lancashire county engineer, according to the contractor, Tarmac Ltd. The process called for laying the macadam cold.

Utility Headquarters Will Sit on 120,000 Volts

Quebec's Hydro-Electric Commission has announced approval of plans for a $20-million new and different Montreal headquarters.

The 24-story skyscraper will contain a three-story electrical substation below ground. Planned in anticipation of increased demands for power in the downtown area, it will extend 53 ft below street level. Next to the substation will be five floors of underground parking space for 250 cars.

The proposed building will house administrative and other departments now scattered through the downtown Montreal area. It will rise 350 ft on a 250-ft front.

Exterior curtain walls will be satin-finished steel; two of the wings will have masonry facades.

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SPEED...

INSTANT-RESPONSE ELECTRICITY controls bowl lift, tailgate, and apron. For high-speed maneuverability, you have electric kingpin-steer. With either torque-converter or 10-speed step-gear transmission, you work or travel at *fastest* practical speed. And this 335-hp machine travels at over 30 mph!

DEPENDABILITY...

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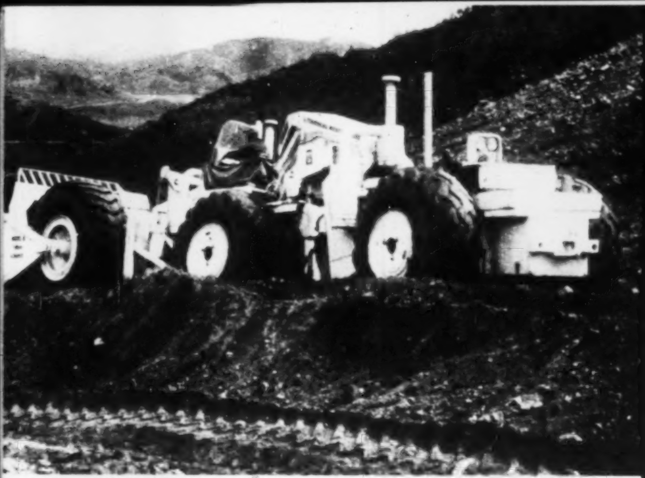
Ask for a demonstration!



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436 HP, 40-TON WORK-WEIGHT let Twin-C push-load today's *biggest* scrapers *fast*. 4-wheel drive on 7′-high, 2½′-wide tires, with L-W power-transfer differentials, provide the needed flotation and traction to work steadily in all types of materials.

PUSH-LOAD FASTER with *non-stop shift* . . . *kingpin-steer* for faster maneuvering and positioning . . . *20-mph speed.* With synchronized torque converters, constant-mesh transmissions, Twin-C matches scraper speeds better, gives scrapers a fast-speed shift-saving boost out of cut.

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L-W 660 Motor grader

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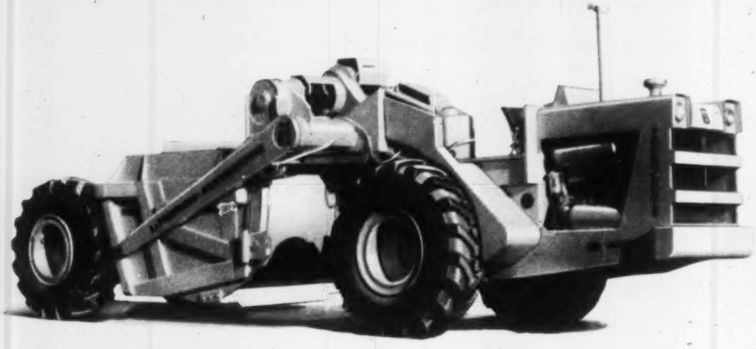
MORE BLADE WORK . . . FASTER . . . than *any* other grader, of *any* size, at *any* price . . . proven by owners everywhere! Biggest of L-W's 7 sizes of Adams* graders, 660 POWER-*Flow*® is nearly 14 tons of grader applying 190 hp to your work through a torque converter. Rugged 160-hp "stick shift" 660 also available.

WORK AT FASTEST POSSIBLE SPEED AUTOMATICALLY . . . with torque converter plus tail-shaft governor on 660 POWER-*Flow*. Speeds to 27.4 mph! Positive blade control through BIG 63″ circle. Blade movement is fast . . . you go from deep ditch-cut position to high bank-cut in less than a minute!

ALL WELL-KNOWN ADAMS STRENGTH FEATURES are standard on the "660's": continuous-welded one-piece frame, full-floating rear axle, welded bar-and-plate front axle, anti-friction bearings on all gears and shafts, life-time lubricated universal joints, and rubber-mounted engine.

See one in action!

...the "before and after" tool



D TOURNAPULL® with 9-yd capacity saves you money on smaller-yardage scraper work around your job. It builds haul roads . . . prepares cuts and fills . . . shoulders and backfills . . . stockpiles topsoil . . . and handles miscellaneous clean-up work on even the biggest projects. "D" has 138 hp, 29.5-mph speed, electric controls, and is as rugged as *any* scraper.

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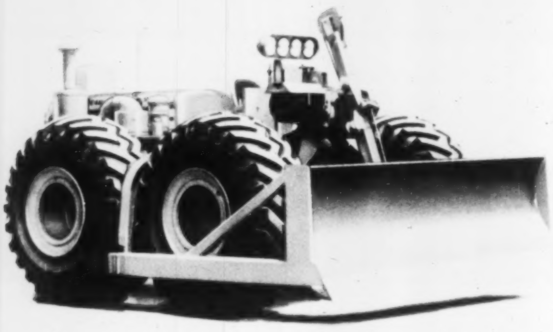

TOURNATRACTOR®, 218-hp tractor-on-rubber belongs on any *dirtmoving* project . . . because it is completely *mobile*. With 17.2-mph speed, it has both working and moving speed to handle any tractor jobs that pop up on big work-areas. Use it for pulling compactors . . . it supplements your rollers with 20 tons of its *own* weight concentrated on its 4 big 2′-wide tires. Torque-converter, constant-mesh transmission helps it doze *fast*. Tournatractor will earn money on *any* standard tractor assignment.

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Job-in and job-out, your L-W Distributor can be your biggest profit booster. He will serve you as a non-salaried partner . . . who's an expert on equipment problems. Remember: while you are handling only a few contracts a year, he is associated in some way with *dozens* of earthmoving jobs.

Put his experience and know-how to work for you. Call him in before you prepare your bids. Get his suggestions on how you can handle the job at lowest cost. Let him analyze your fleet, to help determine which rigs can still earn their keep . . . which ones need overhauling or reconditioning . . . and which, if any, you should trade in on new machines to protect your profit margin.

Your L-W Distributor can be a big help, too, in planning an efficient *maintenance* setup. He'll check over your parts and replacement stocks, and help arrange a schedule so his service department and yours can work together with greatest efficiency.

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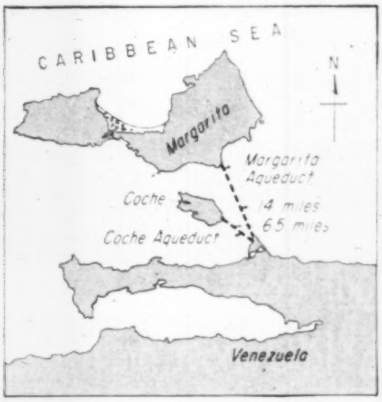

Fast Work Wanted

Venezuela awards job for longest undersea aqueduct

Venezuela has specified a seven-month limit for construction of two underwater pipelines that will supply fresh water to two offshore islands in the Caribbean.

The line serving the island of Margarita, 14 miles from the mainland, will be the longest undersea pipeline in the world. The other line—6½ miles long—will serve the smaller island of Coche.

The $10.4-million contract went to a three-firm combine: Constructa Collins, de Venezuela, C. A., a subsidiary of Collins Construction Co., Port Lavaca, Tex.; C. A. DeLong de Venezuela, subsidiary of DeLong Corp., New York City; and a Venezuelan firm, Tecnica Constructora, C.A., Caracas. They must complete the two aqueducts by September.

The Venezuelean Government's National Institute of Sanitary Works is eager to get the job done since the agency is presently supplying the population of 70,000 on both islands with fresh water transported by barge. This has been a very expensive and unsatisfactory method.

The Margarita aqueduct is a 30-in.-dia steel line delivering 11.4 million gallons a day. The Coche line is an 8¾-in.-dia pipe of 400,000 gals per day capacity. The 30-in. line will be laid in an average depth of 39 ft of water. At its lowest point it will be 93 ft below the ocean surface.

The lines will be fabricated on shore and pulled into the sea in a manner similiar to the construction of the Hyperion outfall, built two years ago at Los Angeles by Collins Construction Co. (ENR July 25, 1957, p. 33). The project was designed by Daniel, Mann, Johnson & Mendenhall, architect-engineer, Los Angeles.

THE IROQUOIS DAM...

A RECENT S & H FOUNDATION INVESTIGATION AND PRESSURE GROUTING PROJECT

Photo courtesy of Power Authority of the State of New York

Thousands of feet of drilling and sampling were performed for the initial planning of the Iroquois Dam (St. Lawrence Seaway). The accurate soil samples and high quality rock cores recovered contributed materially to the design of a suitable and firm foundation.

In the second phase of our work on the Iroquois Dam we drilled the necessary grout-holes and performed the pressure grouting. Completely sealing off the faults and cavities that our drilling revealed required the injection of over 10,000 cu. ft. of cement grout.

Other St. Lawrence projects on which Sprague & Henwood services were utilized include the Long Sault Dam, the Barnhart Island Power Dam and the Massena Intake.

Sprague & Henwood's unbeatable combination of experienced drilling and grouting personnel, modern equipment, and expert supervision is your assurance of the satisfactory completion of your work. Behind this combination is over 75 years of accumulated knowledge and experience in the drilling field.

For foundation investigation and pressure grouting required for tunnels, buildings, dams, bridges, or highways, contact the Sprague & Henwood branch nearest you.

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To take advantage of the superiority of D-A "Extra Treated" Diesel Oil, you must *know* how far you may safely lengthen your drain intervals. To do this, D-A's free laboratory analysis is at your service. Ask your local D-A representative for details; he will be glad to show you how you can get the best lubrication for the least cost.

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Field and Office

Seabees Design Special Picking Frame

Capt. Mark H. Jordan (CEC), USN
Director, Seabee Division
Bureau of Yards and Docks
Washington, D. C.

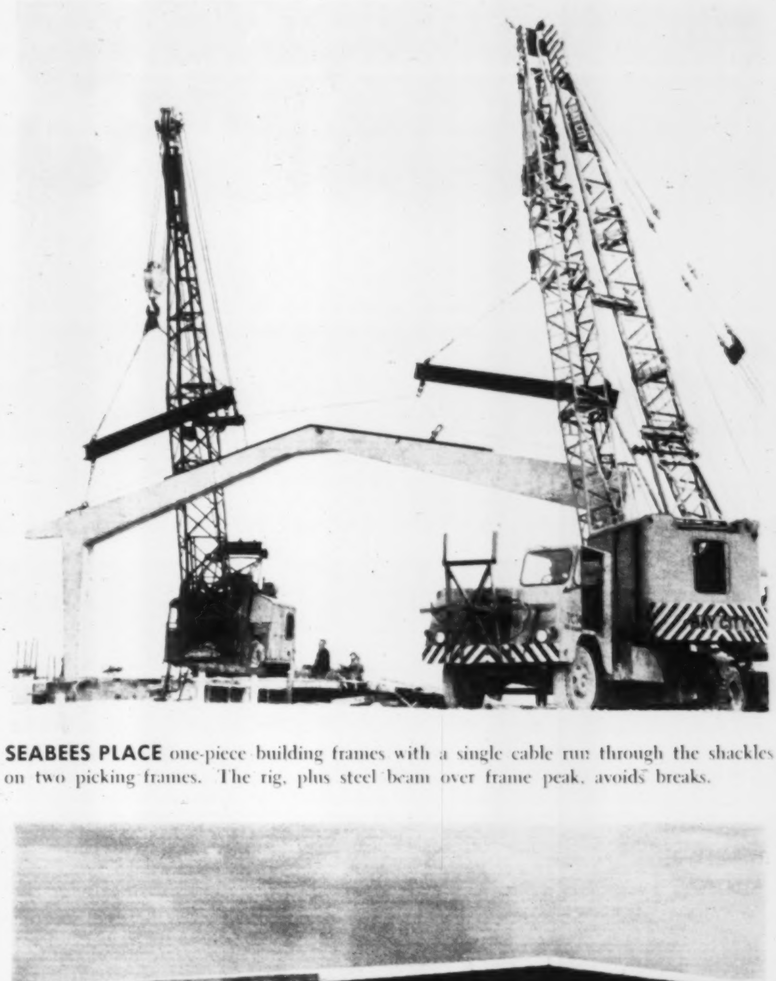
At Futema, Okinawa, the Seabees of Mobile Construction Battalion Three have been building a modern permanent heliport for the Pacific Fleet Marine Force.

The Futema project includes hangars, barracks, bachelor officers' quarters and mess halls, all consisting of precast rigid frames and precast wall panels and roof slabs. Total value of the program, if performed by conventional contract, is estimated at more than $10 million.

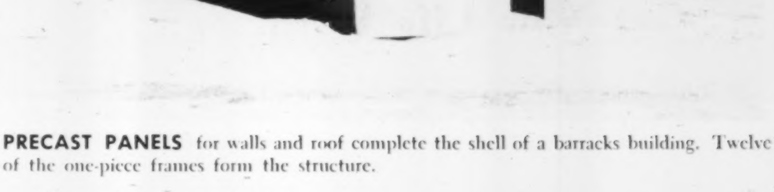
A tough erection problem was posed by the mess hall, for which 52-ft rigid frames were precast in one piece. A contractor working to identical plans on another Okinawa site cracked three such bents while lifting them and finally shifted to forming and casting them in place. After careful analysis of the stresses involved, MCB-Three developed an equalizing lifting rig involving two strongbacks and three cranes. It made its first lift successfully in early December.

The entire Futema working area was laid out on a mass-production, assembly-line basis. Activities centered in the central steel-bending yard and concrete precasting yard, which adjoin each other. Here reinforcing cages were made up for roof slabs and wall panels, which were concreted on permanent beds in the casting yard. Bending of bars for the main structural bents was also done in the central yard; forming and concreting of these members, however, were done on the building site, utilizing the floor slab as a working surface.

The Navy doesn't intend to have Seabees perform large-scale concrete building projects in the event of a mobilization. The Futema project merely is part of a continuous training program.



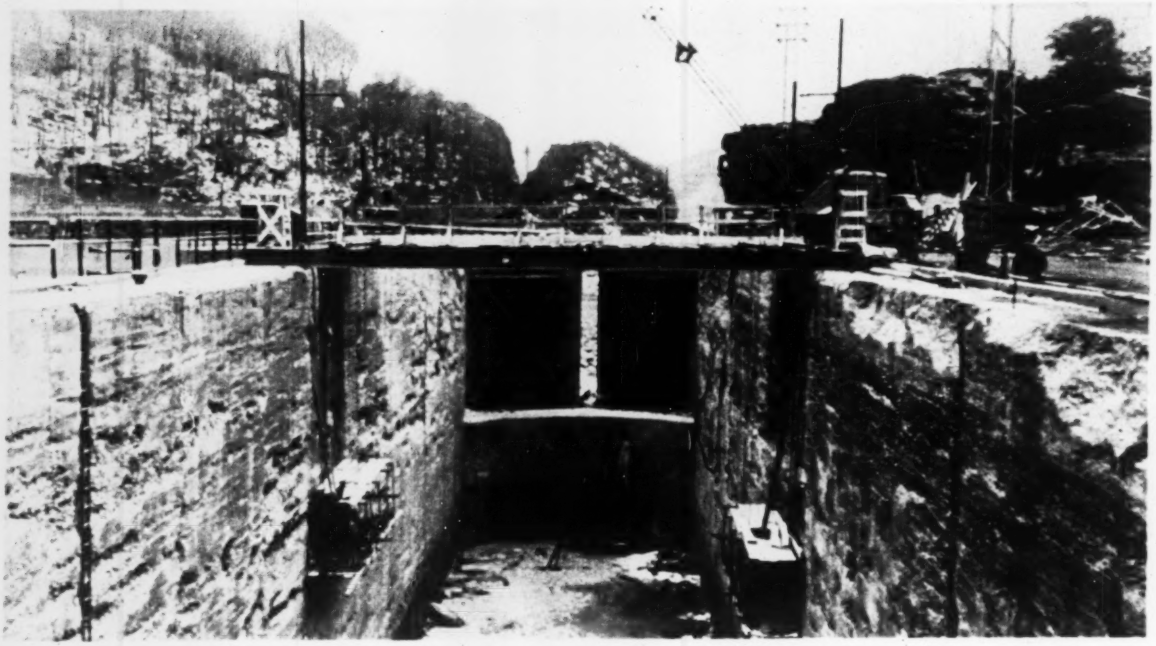
SEABEES PLACE one-piece building frames with a single cable run through the shackles on two picking frames. The rig, plus steel beam over frame peak, avoids breaks.



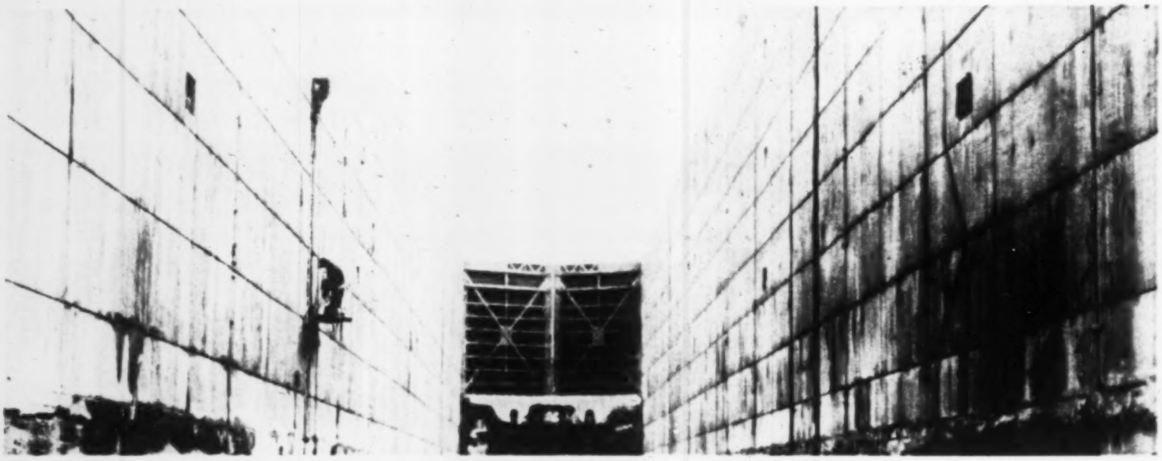
PRECAST PANELS for walls and roof complete the shell of a barracks building. Twelve of the one-piece frames form the structure.

The work at Futema is under the immediate direction of Commander Spencer R. Smith, CEC, USN, commanding Officer of MCB Three. Resident Officer in Charge of Construction for BuDocks on Okinawa—whose relationship to the Seabees is essentially the same as it would be to a civilian contractor—is Captain Herbert J. Hartman, CEC, USN. In over-all charge of Navy construction in the Pacific for BuDocks is Admiral Short, whose headquarters is at Pearl Harbor; he holds down two jobs, being top Seabee commander under the title of Commander, Naval Construction Forces, Pacific, and also serving as Director, Pacific Division, Bureau of Yards and Docks. Plans for the Futema work were prepared by Thomas B. Bourne and Associates of Washington, D. C., under A-E contract with the Navy.

(Field and Office continued p. 76)



Eroded Concrete Walls Of Canal Lock . . .



. . . Get New Life With Iron Plate Lining

Wrought iron plates installed over deteriorating concrete has extended the life of the side walls of two locks on New York State's Erie Canal.

At both locks, concrete spalling was so bad that a hazard to shipping had developed. Severe abrasion from boats scraping the walls together with the spalling made collapse of complete wall sections a possibility.

Several alternatives for repair were studied before the Department of Canals decided the iron lining offered the most lasting answer.

Iron plate $\frac{1}{2}$ and $\frac{3}{4}$ in. thick, was fastened a few inches from the concrete walls with bolts and cinch anchors. Concrete was then placed between the liner and the walls.

At Lock No. 17 in Herkimer County, 575 tons of wrought iron was used in renovating the 45 ft wide lock. Lock No. 9 in Rotterdam Junction was lined with 150 tons.

Wrought iron was also used for bull nosing, chain, and a new lock gate.

The iron was produced by A. M. Byers Co., Pittsburgh, Pa. Weber Construction Co., Schenectady, N. Y., installed the plate. Troy Slag Products Co., Troy, N. Y. was general contractor for repairing both locks.

(*Field and Office continued p. 78*)

Some Ideas

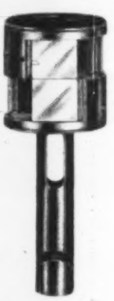
K+E

for your file of practical information on surveying
from
KEUFFEL & ESSER CO.

An anonymous Persian once said: "Luck is infatuated with the efficient." In line with this bit of good, dry wisdom, we present five items that, in their measure, will step up surveying efficiency . . . by permitting faster work, by promoting greater accuracy, or by doing both. For example . . .

The New K&E Double Right Angle Prism

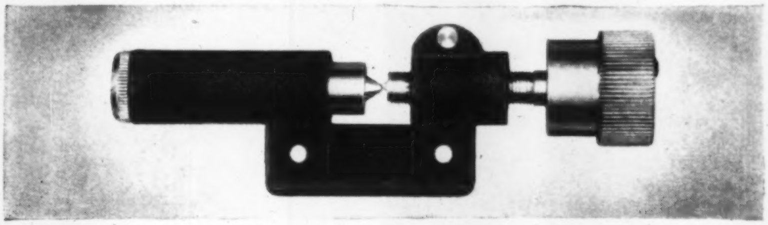
This simple, hand-held instrument belongs in every surveyor's kit. It bends the line of sight exactly 90° to left and right, so that you can quickly establish a right angle to your position between any two points — without the bother of setting up a transit. This can save you much time and effort when staking out small areas or laying out squares for contouring.



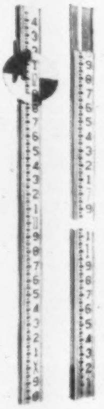
Objects straight ahead can be sighted clearly through a slot in the handle, even when they are at a steep angle above or below your position. Actually, the new Double Right Angle Prism is an improved edition of an earlier K&E model. Tests show that it's much more accurate. The prisms are much larger . . . points are picked up more quickly.

High and Low Gear Tangent Settings

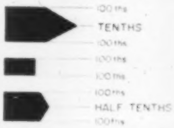
Exact aiming and precise vernier settings are fast, smooth and easy with the new K&E 2-Speed Tangent Screw. Its two sets of gears control rough adjustments separately, with one screw. Simply by reversing the tangent screw, you swing into "low gear" once the rough sighting has been made. Then, with the screw operating at a slower, finer ratio (4 to 1), you have firm, positive control of final settings. Hesitation and delay are eliminated, with considerable saving of time and temper for the whole field party.



The upper motion of every new K&E PARAGON® Transit is fitted with a 2-Speed Tangent Screw, as standard equipment. The new control may be specified for the other two motions as well. If you already have a PARAGON Transit (not more than 5 years old), you can order these time-savers individually, and install them yourself.



Latch Type Clamp



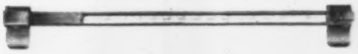
"Skyline" Pattern

Rigid as a Steel Column

Here are two outstanding K&E features offered by the recently-developed Detroit Leveling Rod. The rod is made in three sections. Each of these is joined by an exclusive locking device — a latch-type clamp on a steel brace, drawing the sections together in rigid contact. When erected to its full 12.5-foot height, the Detroit Rod is as solid as one continuous bar. There is no wobbling or binding at the joints. Even habitual skeptics have called this "a revolutionary advance" over conventional locking methods. Another important feature: the new "Skyline" graduations, developed by K&E to make fast but accurate readings possible at greater distances, with less eyestrain. The distinctive pattern shows tenths of a foot, half tenths and hundredths — sharply on a clean, white background. Every Detroit Rod is furnished with a strong, mildew-resistant canvas bag, partitioned to hold the three sections. The bag is only 4'6" long.

New Tape Thermometer Snubs Air Temperature

On a winter afternoon, when the mercury can drop from a balmy 50° at noon to 20° at 4 pm, a 100 foot steel tape can shrink as much as 1/20 of a foot. A reliable tape thermometer assures accurate measurements by showing actual tape temperature — often 20 to 30° higher or lower than that of the air. K&E designed this new tape thermometer so that the bulb may be *clamped* tightly against the tape surface. It reports the *tape's* temperature, not the air's. Above-zero readings appear in black, below-zero in red. The instrument complies with rigid Government specifications.



Red and Yellow and Seen All Over

For years, surveyors have protected life, limb and property by painting tripod legs in loud colors. Now, all K&E wide-framed tripods are available *pre-painted* in high-visibility yellow, with a bright red stripe. You can throw away your paint brush!

All these products may be seen and had at your nearest K&E dealer. Stop in and see them. Or simply clip and mail the coupon below . . .

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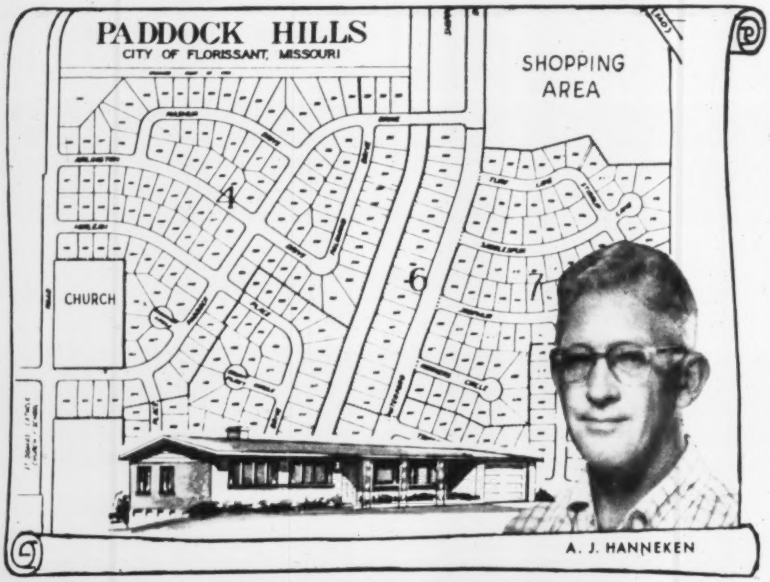

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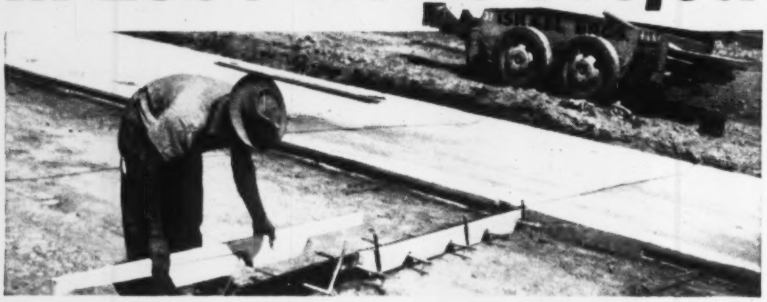
In 2500-Home Project



"Does the job best for streets, curbs, and sidewalks," says big St. Louis construction company

"Building a city of quality homes like this calls for materials that meet highest standards of performance," says A. J. Hanneken, manager of Israel Brothers Construction Co. "That's why Flexcell Non-extruding Fiber Expansion Joint was specified throughout for Mayer, Raisher, Mayer's huge Paddock Hills development near Florissant, Missouri."

Flexcell Fiber Board bonds firmly to concrete, compresses without extruding, re-expands to keep joints filled. Uniform asphalt impregnation. Tough, rigid, light in weight. Easy to cut and install.

Your Flexcell Distributor is equipped to fabricate shapes and strips to your specifications. Call him!

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English Firm Develops Prefab Concrete Framing

Building contractor John Laing & Son, Ltd., of London, has come up with a prefabricated structural system based on prestressed concrete framing.

The Laingspan system was developed in association with architects of the British Ministry of Education with an eye on economical school construction.

Easy handling during erection is a major feature of the system. Basic beam, spandrel and column units are designed for erection with a light crane assisted by just one or two men. This idea of construction economy extends through the other standard items, such as exterior panels, hollow lightweight concrete partition blocks and standard precast floor sections.

Exterior wall panels are sandwiches consisting, from outside to inside, of hardwood sheathing, building paper, aluminum foil and mineral-board lining, all framed in wood. These panels fit directly into standard rabbets on the precast columns.

Standard features include internal and external corner designs, framing connections and fittings to reduce custom work to a minimum.

Traverse Angle Mistake Located by Coordinates

It's a neat trick for a surveyor who makes an angular mistake in traverse closure if he can tell from his notes which angle is sour. Here's a wrinkle that will quickly single out a bad corner if other elements of the traverse are good.

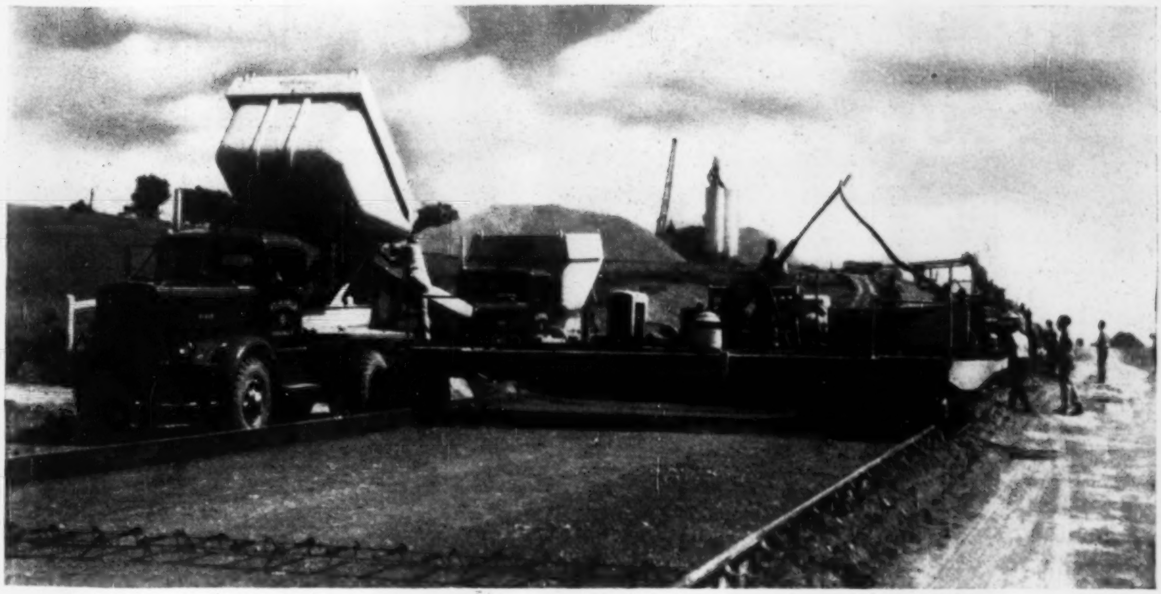
Assign a bearing to any line and assign coordinates to one end of the line. Then compute coordinates for all points around the traverse in a clockwise direction, using the unbalanced field angles and distances. If you close with acceptable accuracy at the starting point, your angular blunder is there, since your satisfactory closure has shown other elements of the traverse to be good.

If you don't close satisfactorily at the starting point, the mistake might be at any other corner. To find which, compute coordinates in a counter-clockwise direction from the same starting point as before.

Then compare the new coordinates with the coordinates obtained on the clockwise run. Where the two sets agree, that's your bad angle—the only element not needed to make the closure at that point.

This method was reported by E. D. Jones of the New England Survey Service, Inc., West Hartford, Conn.

Now... Maxon Equipment gives you all the benefits of "central mixing — non-agitated hauling"!



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Research and Development

New "Oscar" can trace contours directly from air photos.

Electronic Eye Maps Contours

Automation is now in sight for the tedious and expensive job of tracing contours from air photos. A Canadian firm has unveiled a prototype electronic monitor for stereoplotters, and work is under way toward getting a production model of the monitor on the market next year.

The machine is an advanced version of "Oscar," the electronic monitor hailed as a "major breakthrough" in photogrammetry last year (ENR June 19, 1958, p. 23). Existing stereoplotters can be fitted with the new machine.

The first Oscar-Auscor, for Automatic Scanning Correlator could find spot elevations for profiles or cross sections but was not able to follow a contour. As foreseen last year, however, equipping Oscar to contour was mainly a matter of applying refinements.

The improved machine can draw contours on a topographic map automatically in a fraction of the time it takes a human operator. The developing firm says it speeds up contouring at least five times. Electronic gadgets attached to a conventional stereoplotter trace the contours without human assistance.

The machine won't completely replace the operator, however. It still takes a human to ignore houses and trees. The electronic device reads aerial photos as they are and contours tree tops and barn roofs as it sees them. One operator will be able to monitor several machines simultaneously, the company says.

Now called Stereomat instead of Auscor, the advanced model opens up wide possibilities for additional reduction and application of photogrammetric data. The Toronto firm that developed the machine, Photographic Survey Corp., and the Los Angeles licensee for manufacture in the U.S., Benson-Lehner Corp., envision auxiliary apparatus coupled with the basic equipment. The combinations of equipment will be able to plot profiles, sculpture three-dimensional terrain models to any scale, and record x-y-z space coordinates in digital form on tape or punch cards.

Benson-Lehner has a commitment to produce the first U. S. application of the Stereomat for a unit of the Defense Department.

(*R&D continued p. 83*)

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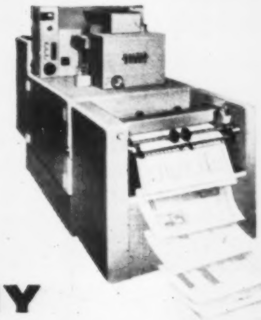

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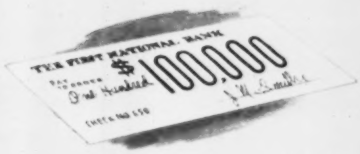

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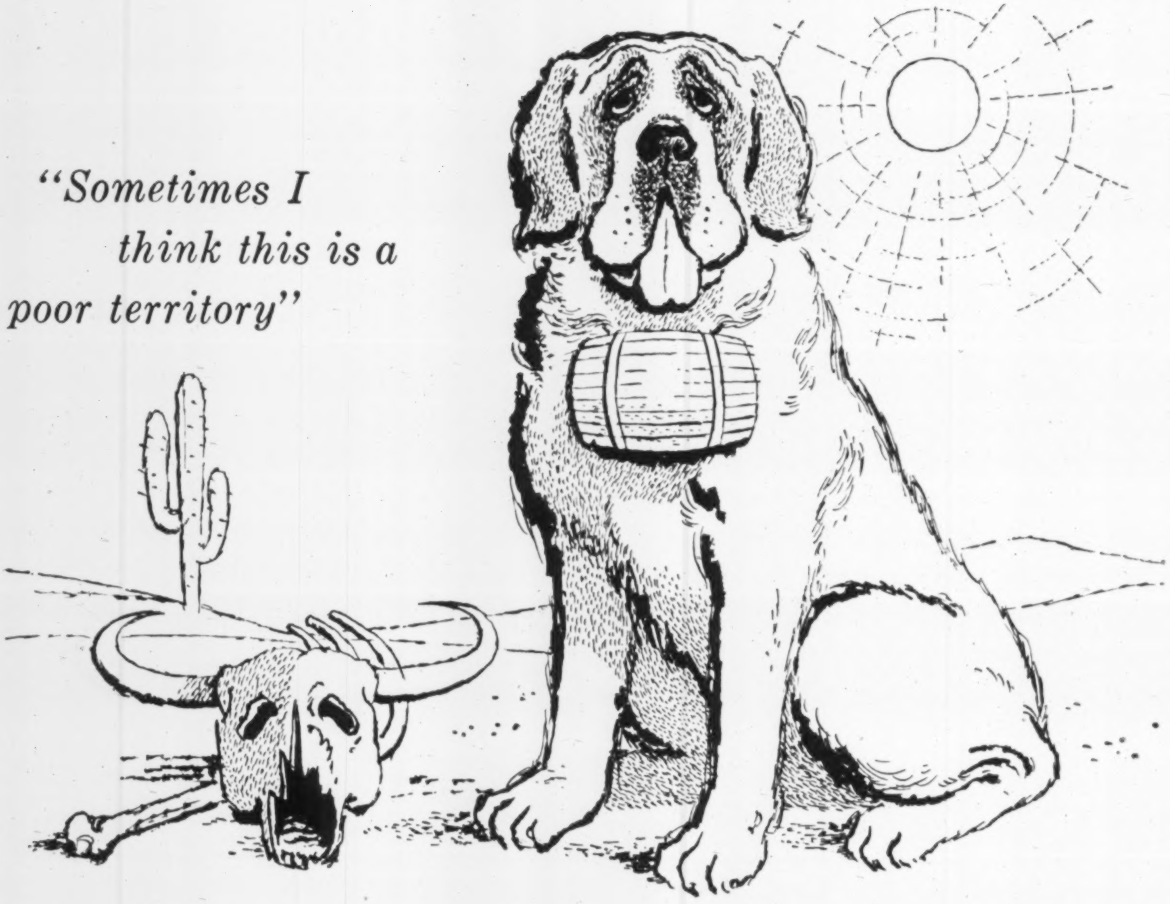

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Units of Yard and Pound Put on International Basis

Six countries have agreed on this international standard for the yard and for the pound.

One yard = 0.9144 meters.

One pound = 0.45359237 kilograms.

Long-standing minor differences between countries led to the standardization, which will take effect on July 1.

Canada, New Zealand, the United States, the United Kingdom, South Africa and Australia took part.

An international inch was derived from the yard standard and defined as one inch = 25.4 millimeters.

This value for the inch has been in general use for some time. It is legal in Canada. The American Standards Association has used it since 1933.

In this country, the Coast & Geodetic Survey has been granted an exception to the new standards. All its existing data, maps and basic survey networks are based on this relationship:

One foot = $\frac{1,200}{3,937}$ international meters.

Bureau of Standards will allow this unit to continue in use since little or no exchange is made between survey and industrial or scientific data. The unit will be known as the American Survey Foot.

With an eye on other units, participants selected a conversion factor for the international pound, divisible by 7 to give an exact value for the grain:

One grain = 0.06479891 gram.

The grain is the common unit in avoirdupois, apothecary and troy pounds. There are 7,000 grains in the avoirdupois pound and 5,760 grains in both the apothecary and troy pound.

Gallons were left out of the standardization. The U.S. and Imperial gallons are so different that a compromise unit was not practical. The Imperial gallon equals approximately 6/5 U.S. gallons.

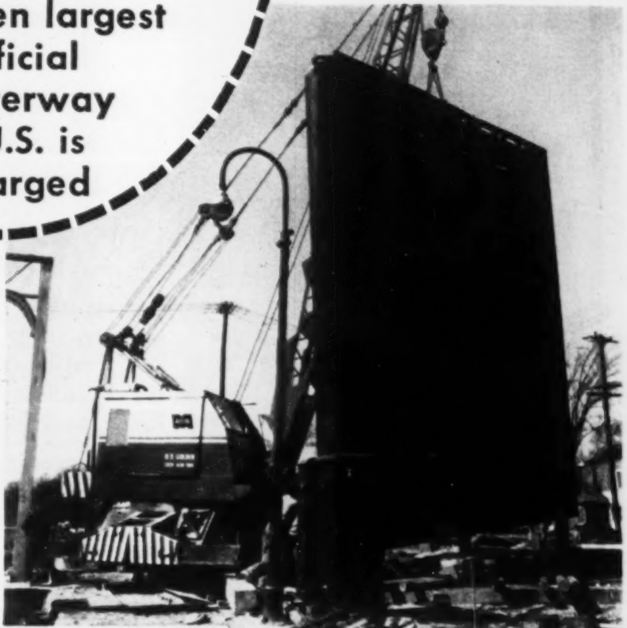
Air Force Borrows From Buck Rogers Inventions

Air Force hardware-developers are working on a "reactor gun" to enable weightless travelers to move around in outer space. You saw the gimmick 20 years ago in Buck Rogers.

The reactor gun consists of a pack of high-pressure air bottles strapped on the space-man's back. A short hose contains valves and a nozzle. To go one way, the space worker or traveler just points the nozzle in the opposite direction and squeezes the trigger.

(*R&D continued p. 86*)

WAUKESHA *powered*
***MARION* Truck Crane**
lifts lock gates when largest artificial waterway in U.S. is enlarged

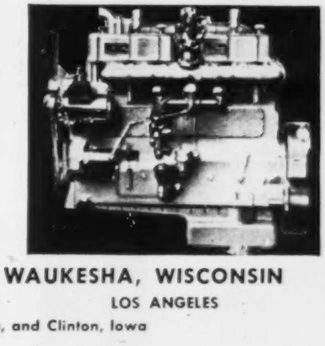


● To handle the huge gates for locks in the New York Barge Canal expansion project—R. D. Golden Co. used this Waukesha-powered 40-ton Marion type 43-M mobile truck crane. With its Waukesha engine powering the 40-ft. boom, at 64° and at a 22-ft. radius—the 30 x 45 x 2 ft., 32-ton gates were lifted with ease, swung and lowered into position. This mobile Marion unit is mounted on a Hendrickson Carrier powered by a Waukesha 145-GK Engine. The upper frame has a Waukesha 140-GK Engine and Twin Disc torque converter.

Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displacement.

Send for Engine Bulletins 1548 1551

Powering the Carrier—145-GK Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement.

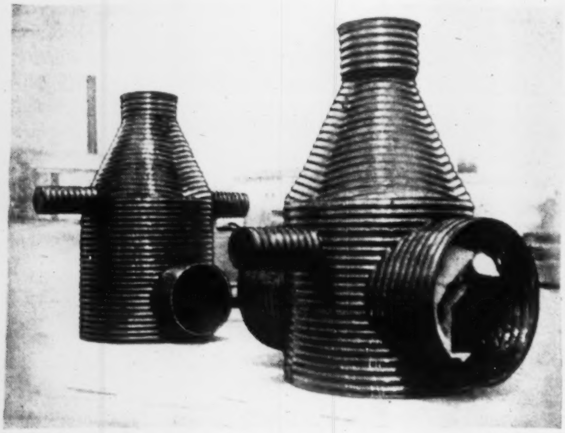


412

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories—Waukesha, Wisconsin, and Clinton, Iowa

HOW FRICTION PROVIDES

NEW DETROIT CONVENTION ARENA in Detroit's new Civic Center, was constructed with circular dome shown above. Giffels and Rossetti, Architects, specified Republic High Strength Bolts. R. C. Mahon Co., Structural Steel Contractor. General Contractor, O. W. Burke Co.



DRAINAGE FACILITIES provide extra long service life, are quick and easy to install, when Republic Steel Drainage Products are specified. The complete manhole units shown were installed by the city of Ormond Beach, Florida, in less than a day. The result was a substantial saving over masonry construction. Mail coupon for more information on Republic Drainage Products.

TUNNELING JOBS MOVE QUICKLY with complete safety when you specify and install precision-fitted Republic Truscon Tunnel Liner. All parts are furnished in a complete package, including fasteners, to assure trouble-free assembly. Exceptional collapse-resistance provides maximum protection to men and equipment during construction and for life of the tunnel. For details on types and sizes available, mail coupon.

STRONGER CONNECTIONS

in New Detroit Structure Fastened with Republic High Strength Bolts

The vise-like clamping force of Republic High Strength Bolts is so great that loads are transferred by *friction* to the structural members themselves. Connecting joints in Detroit's new convention arena are therefore stronger than if loads were carried in shear by rivets.

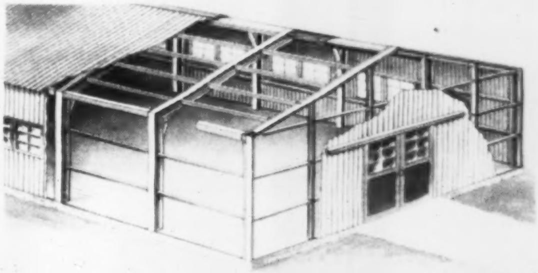
This high clamping force is an advantage that only high strength bolting can provide. And it is one of the reasons why this method of fastening is being used in a steadily-growing number of structural applications.

Users find that where joints are subject to dynamic loading, fatigue life is greatly improved—to the point where fatigue no longer need be a design consideration. And because Republic High Strength Bolts are far stronger than comparable-size rivets, fewer of them can often be used to support equal loads. This fact can reduce fastening costs.

Republic High Strength Bolts can cut costs in other ways, too. Regular steel erectors can quickly learn to install them—eliminating the need for highly-skilled riveting crews and special equipment. Two men—one with a torque wrench, the other with a standard hand wrench—are all that is required.

Republic High Strength Bolts can be installed more easily and more quickly than rivets because the original bolt is the final fastener. After being inserted and tightened sufficiently to hold alignment of members during erection, they can be drawn up tight on a second pass. Even inspection problems are reduced—due to the high precision of impact wrenches in producing uniform tensions.

For strong, safe, fast, and low-cost fastening, it will pay you to investigate fully the advantages of Republic High Strength Bolts. Call your Republic representative, or mail the coupon below.



QUICK JOB-SITE ERECTION is one important advantage of complete steel "Budget Buildings" by Republic's Truscon Division. Their simplified design makes this fast, on-site erection possible—no painting needed. They are also low in cost and re-usable. Truscon "Budget Buildings" are available in widths 12 to 28 feet . . . 10- and 12-foot heights; and in widths 32, 36, 40, 44, and 48 feet . . . 12- and 14-foot heights. Lengths as long as you want them. Send coupon for complete facts.

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Please send more information on:
- ☐ High Strength Structural Bolts
- ☐ Drainage Products
- ☐ Tunnel Liners
- ☐ Truscon "Budget Buildings"

Name__________ Title__________

Company__________

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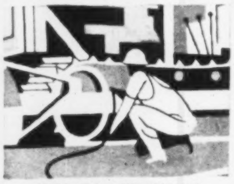
Quaker Thermoid

VERSICON

the all-purpose hose with truck-tire durability

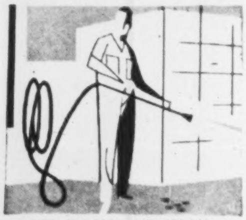
FOR COMPRESSED AIR



FOR OIL AND GREASE

It's reinforced with braided *rayon*—the fiber that puts 100,000 rough miles into your truck tires. Thus, with twice the tensile strength of cotton (the yarn usually put in this kind of hose), rayon reinforcement over a specially compounded synthetic tube lets Thermoid VERSICON hose do even more jobs for you.

VERSICON hose is good for compressed air—especially for use with air-operated drills and pumps—for steam, water, oil, grease, gasoline, welding gases, and many dilute acids. Truly versatile!



FOR WATER AND STEAM

In specified lengths up to 500 feet, sizes $\frac{3}{16}''$ to 1″; to 250 feet in sizes $1\frac{1}{4}''$ and $1\frac{1}{2}''$. Ask the Thermoid industrial distributor about VERSICON hose, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

THERMOID PORTER DIVISION

H.K. PORTER COMPANY, INC.

Divisions: Connors Steel, Delta-Star Electric, Disston, Forge and Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

Offshore Tower Will Be Built for Ocean Studies

The Naval Electronics Laboratory is planning to build an 80 ft oceanographic research tower three-fourths of a mile off San Diego, Calif. It will stand in 55 ft of water with its top deck 25 ft above water.

Shallow ocean water conditions will be studied to help find ways to detect and neutralize enemy mines, sneak craft and submarines and to improve Navy communications and navigation systems. Chemical content, acoustic properties and changes caused by weather, sunlight, current and tides will be observed. Observations will be made chiefly by continuous recording equipment but the tower will be used also for divers and underwater photographs.

McDonald, Inc., Long Beach, Calif., will build the $135,000 structure. It was designed by Moffatt and Nichol, Long Beach.

Effect of Timber Cutting On Streamflows Studied

Preliminary results of the first study of the effects on streamflow of timber cutting in the watershed has been reported by the U. S. Forest Service. The report discloses appreciable increases in streamflow after removal of one-half of the mature timber from the watershed of a snowfed stream.

It summarizes 12 seasons of streamflow records before cutting and one season after cutting was complete in the Fool Creek watershed near Fraser, Colo.

The Streamflow increase is estimated to be 250 acre-ft in 1956 when cutting was in progress and 200 acre-ft in 1957 when cutting was completed.

On the 714 acre watershed half of the timbered acreage was cleared. The report stresses that the effects are of a preliminary nature only and are not necessarily indicative of what could be expected over a period of several years.

Agencies Collecting Data On Great Lakes Cataloged

The University of Michigan Great Lakes Research Institute has compiled a listing of hundreds of agencies collecting data in the Great Lakes. Included are the source and location of records on water temperature, color and odor; chemical and biological analysis; water level and meteorological observations.

The sources will now be checked for usefulness of the data by conducting a pilot study on a portion of the Great Lakes for which available data can be examined.

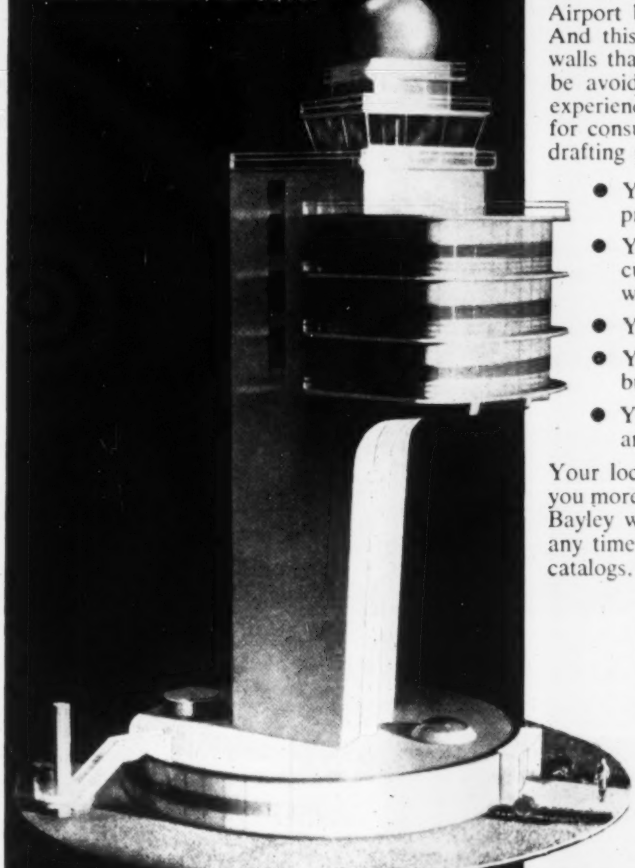
BAYLEY

offers you extensive experience in

WINDOWS & CURTAIN-WALLS for AIRPORT BUILDINGS

Above: Greater Pittsburgh Airport, Allegheny City, Pa.
Designer: Joseph Hoover and Allegheny Dept. of Aviation
Contractor: Dick Construction Co., Pittsburgh, Pa.

Below
Newark Airport Tower, Newark, N.J.
Architect: A. Gordon Lorimer, New York, N.Y.
Contractor: Carl Buhr Inc., New York, N.Y.

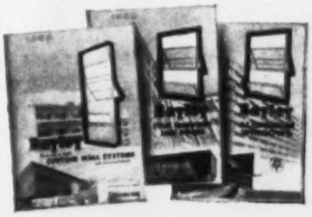


Airport buildings present their own special problems. And this applies equally to the windows and curtain-walls that figure in the project. But such problems can be avoided by making full use of Bayley's extensive experience in this class of work — by calling Bayley in for consultation while your project is still in the rough drafting stages. By doing so —

- You often solve some of your biggest problems *before they arise*.
- You select from a variety of proved curtain-wall and window systems that clear the way for wide individuality in building design.
- You avoid reworking window details later on.
- You get pre-engineered economies: a soundly built wall, soundly installed.
- You get approval of complete plans at an earlier date.

Your local Bayley Representative will be glad to give you more details on these and other advantages of letting Bayley work with you, without obligation. Call him at any time. Also see Sweet's File or write us for Bayley catalogs.

Write today for your personal copies of these three catalogs: **Steel Windows, Aluminum Windows and Aluminum and Steel Curtain-Walls.** See them also in Sweet's Architectural and Industrial Construction Files.



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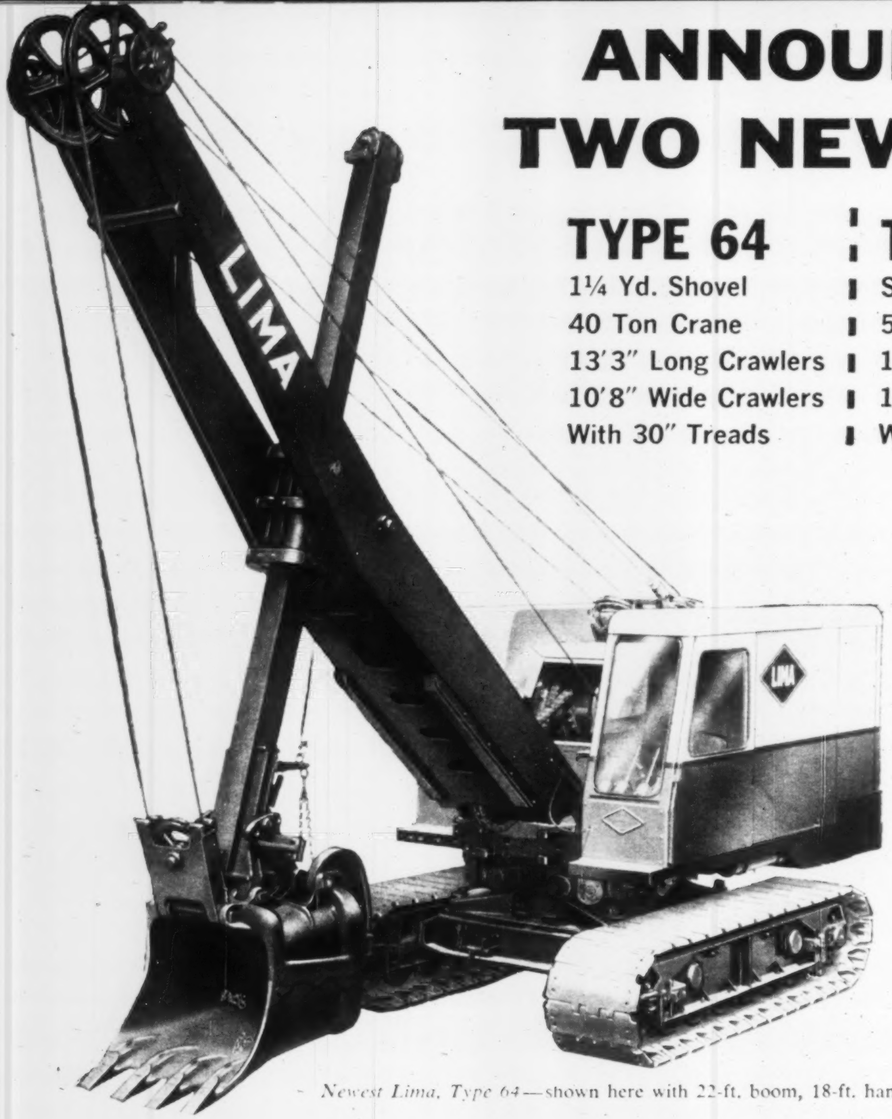
ORIGINATORS • DESIGNERS • MANUFACTURERS • INSTALLERS

ANNOUNCING TWO NEW LIMAS

TYPE 64	TYPE 64-SC
1¼ Yd. Shovel	SPECIAL CRANE
40 Ton Crane	50 Ton Capacity
13′3″ Long Crawlers	17′1½″ Long Crawlers
10′8″ Wide Crawlers	14′0″ Wide Crawlers
With 30″ Treads	With 42″ Treads



- Easily converts in field for use as shovel, crane, dragline, clamshell or pullshovel
- Crawler, truck or wagon mounting available
- Choice of gas or diesel power—with torque converter
- Lima's precision air control lets operator work all day without tiring

Newest Lima, Type 64—shown here with 22-ft. boom, 18-ft. handle, 1¼-yd. dipper.

The rugged new Lima Type 64 fills a definite need for a heavy duty 1¼-yd. shovel, 40-ton crane, dragline and 1¼-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40′ boom at 10′ radius.

Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC; precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steering; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

Designed to Outperform

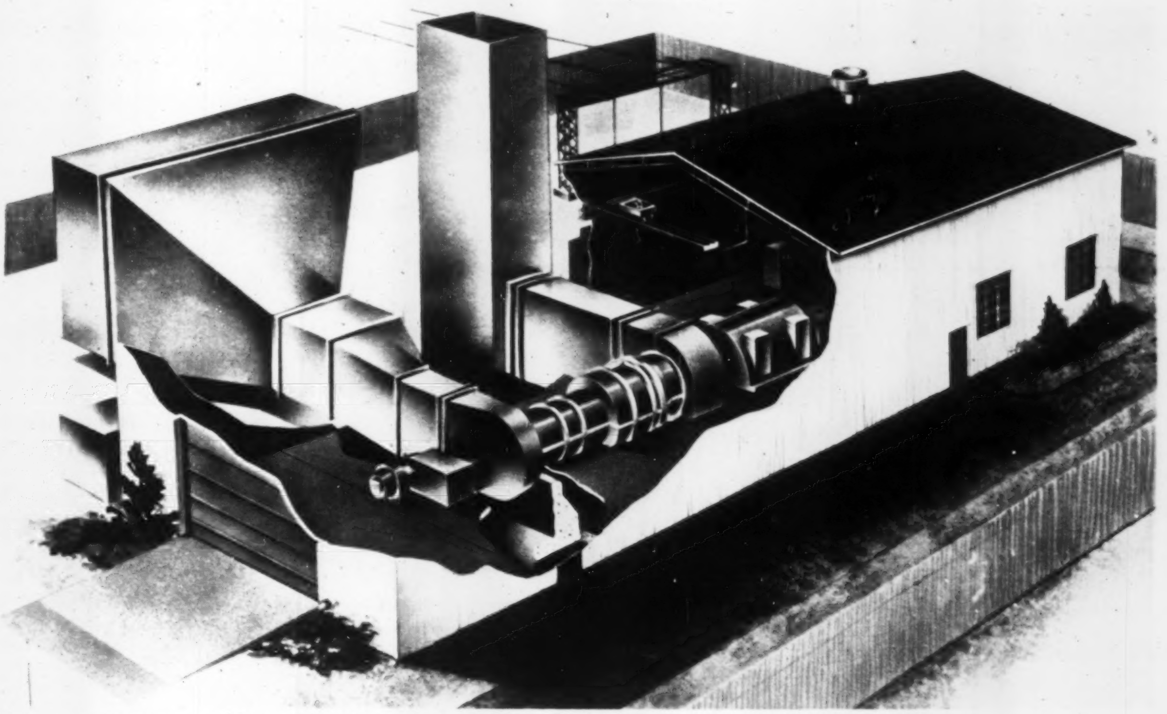
Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment—The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. Write or see your Lima distributor now.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON
5938
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

New Products



$120 per kilowatt of installed capacity is price tag on . . .

Package Generator Designed for Peaking

General Electric engineers have rearranged the usual balance of values in designing a new gas-turbine-powered, package generator plant. They have upped operating cost and shortened expected life—but for a good reason: to lower the first cost.

The new plant is intended expressly for short periods of peak power demand. The first one sold, now being manufactured for the New Orleans Sewerage and Water Board, probably won't run more than a few hours a year. For that kind of operation, fuel cost and service life are secondary. First cost is paramount.

Initial installed cost of the new package runs well below that of conventional plants, GE reports. Company spokesmen say the cost per kilowatt of installed capacity will average about $120. This compares with a first cost in the neighborhood of $150-$160 for steam-turbine generating capacity.

The new turbine is rated at 20,500 kw under normal conditions. It drives a 25,600-kilovolt-ampere, 13,800-volt, air-cooled generator. Net station output ranges from 20,000 kw with ambient air temperature of 90F, to 23,500 kw at 40F.

The turbine alone is about 10½ ft wide and just over 40 ft long. Generator and exciter extend the unit's total length to 65½ ft. The plant requires a building about 28x98 ft.

• What's included?—GE has detailed its cost estimates to some degree for the new plant.

A typical unattended plant would include the following: steel-frame building with insulated asbestos-steel siding and roof; overhead crane; power unit; automatic controls; remote supervisory and telemetering equipment; an evaporative cooler, for intake air in warm weather; intake silencer; underground fuel tanks; power transformer and switching equipment to feed the output into a 34.5-kv line; fence.

GE says it knows the plant can be built, excluding land cost, for $2,660,000 tops. Figures are based, the firm says, on bids from contractors on the East Coast.

Either natural gas or distillate oils fuel the turbine. Firing temperature is 1,600F. Lubricating oil will amount to only a few gallons a year, says GE, and cooling water demand is expected to be no more than 30 gallons a minute. The unit comes to full load in less than a half-hour after starting.

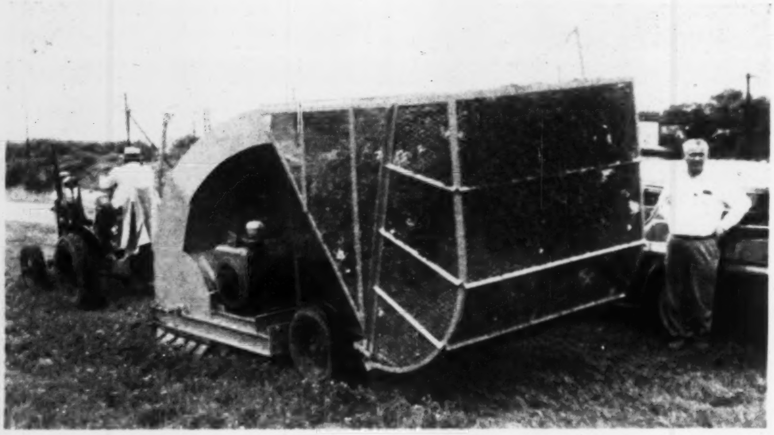
The high firing temperature is one of the features distinguishing this peaking turbine from a unit designed for continuous service. The high temperature shortens the life of certain elements of the turbine. GE figures on 5,000 hours of operation before major maintenance is required. A company spokesman emphasizes, however, that 5,000 hours is a conservative estimate.

• How New Orleans will use it—The New Orleans station will supply power for pumping storm water. The Sewerage and Water Board's power system normally demands 7,000 kw. Steam-electric generating capacity of the system totals 35,000 kw at present.

The new unit will operate when demand tops 35,000 kw. Full-load operation is expected no more than three hours a year, according to one estimate.

New Orleans will have its station in service by the last quarter of next year, says GE. The company estimates it can ship other orders about 16 months after receiving engineering data. General Electric Co., Schenectady, N. Y.

(New *Products continued p. 90*)



One Way to Clean Up on Roads

The Litter-Gitter picks up paper, tin cans, bottles, wood and other debris from roadsides.

Towed by a truck or tractor, the apparatus can clean a 6-ft-wide strip at speeds up to 10 mph. It uses a jet stream of air to dislodge and float debris from the surface. The debris is taken from the air stream to a 7-cu-yd storage bin.

According to the manufacturers, use of their machine will reduce damage to mowers caused by foreign materials in the roadside turf. Finn Equipment Co., 2525 Duck Creek Road, Cincinnati 8, Ohio.

Drafting Tool Does Two Jobs

A triangular drafting tool called the Pacemaker combines the functions of a T-square and triangles. With it you can construct many geometrically accurate and complete drawings without any other drafting instrument.

Angle indications and guide lines are printed on the underside of the triangle (thereby avoiding error due to deflection). All angle guide lines converge to the center of the hypotenuse, allow both right and left projections without having to flop the tool.

To start a drawing, construct a vertical or horizontal baseline by drawing a straight line along the hypotenuse of the triangle.

To construct a perpendicular, lay the Pacemaker on the drawing so that the 90-deg scribed line lies directly over the drawn base line; draw along the hypotenuse and you have a 90-deg perpendicular to the base line.

To construct parallel lines, either horizontally or vertically, mark off divisions on the base line. Slide the triangle along the base line until the hypotenuse is on the indicated division. Then draw a parallel line.

To construct an angle to the base line, turn the Pacemaker and align the desired angle over the base line. Then by drawing along the hypotenuse, you make your angle.

If angles other than those indicated are desired, a protractor must be used for their projection. Cardinell Corp., Montclair, N. J.

Pocket Batcher for Desert Work

This rapidly assembled concrete batching plant serves widely scattered small-scale building operations located near Edwards Air Force Base in the Mojave Desert of California.

According to concrete producer, D. L. Holliday, the work going on would not warrant a large portable or stationary plant. Located 20 miles from the closest ready-mix installation, the bantam batcher serves private building construction in the vicinity of Edwards Air Force Base.

The plant will operate at the site for at least three years. It has storage capacity for 40 tons of aggregate in three sizes and 950 cu ft of bulk cement.

It can produce concrete at the rate of 60 cu yd per hr. Cement is batched automatically, aggregates manually. Noble Co., 1860 Seventh St., Oakland, Calif.

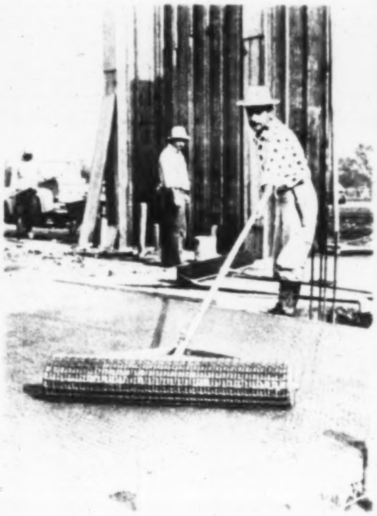
In-Line Crushing Plant Has a Closed Circuit

A single-crusher in-line plant for low-cost production of specification material has been introduced.

Known as the Model 8C, the plant consists of a mechanical feeder with loading hopper, 3x6-ft single-deck, buzzer-type screen, 1024 jaw crusher, bucket wheel and 18-in. feed and return and deliver conveyors. The unit is mounted on a rubber-tired chassis.

The plant operates in a closed system between crusher and screen by means of a revolving bucket wheel and return conveyor arrangement. This cycle produces an accurately-sized crusher run.

One man can run the 22,000-lb plant. Its power requirement is from 40 hp to 60 hp. Pioneer Engineering Division, Poor & Co., Inc., Minneapolis 14, Minn.

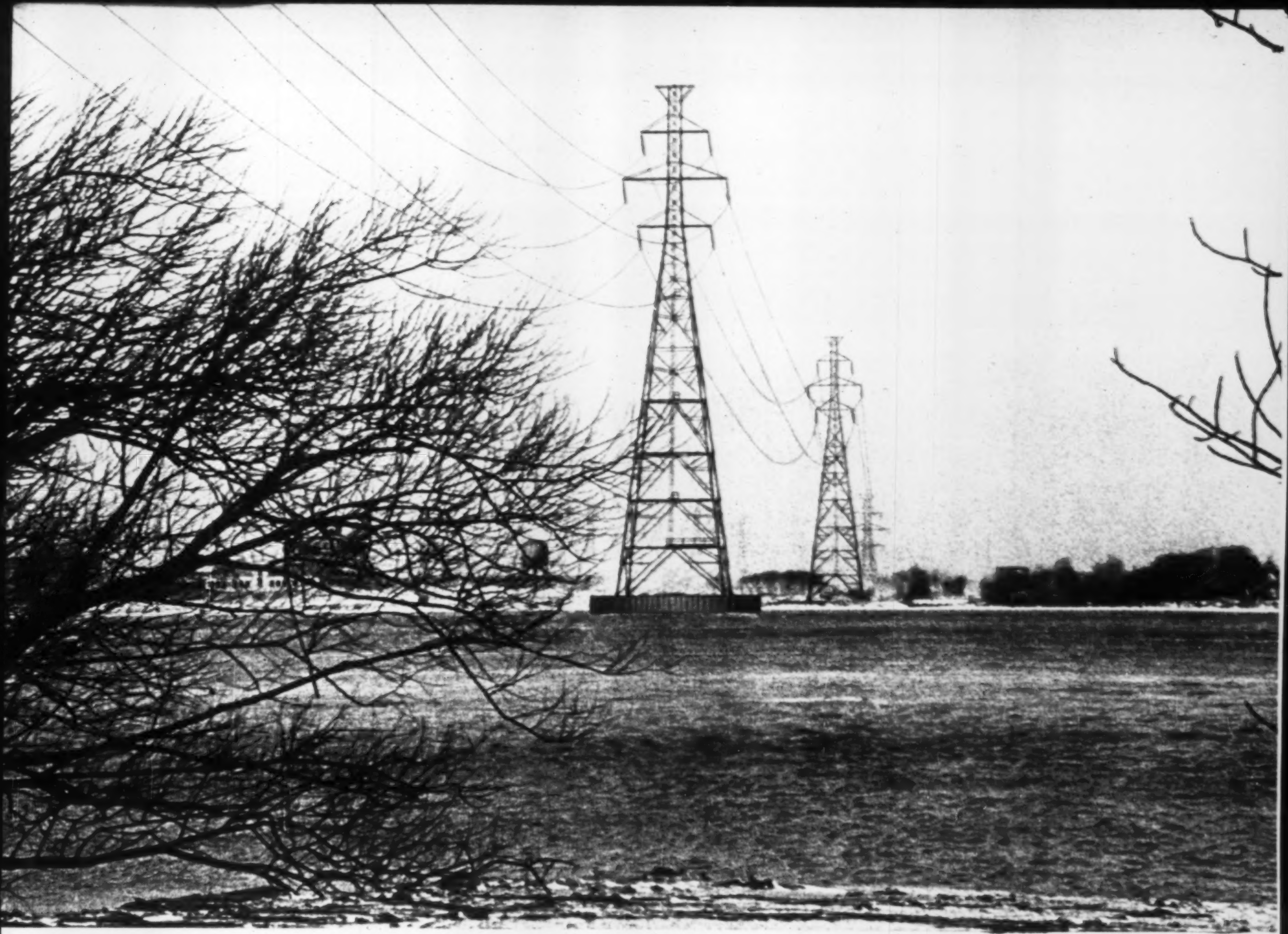


Rolling Your Concrete Gets Away from Jitterbugs

Instead of the lift-drop of a concrete jitterbug, crews can now tamp a concrete slab by just rolling it with a Roller Tamper. The manufacturer says the roller will pull up grout for trowelling, knock down bumps, and usually without having to slog through the concrete.

The long handle will clamp at an angle for rolling sidewalk slabs or for working in restricted areas. Reports say the roller applies uniform pressure for even slab compaction and minimizes concrete "creep" or sloped pours. Cimteco Division, H. S. Watson Co., 1316—67th St., Emeryville 8, Calif.

(New Products continued p. 92)



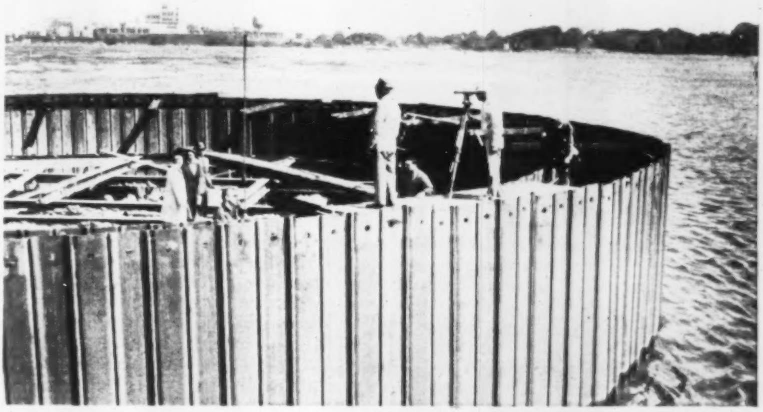
This long-range view shows island and tower in the Niagara River.

Man-made island of steel piling

An artificial island of steel and concrete now dots the Niagara River about one mile above Niagara Falls. The 85-ft-diam structure consists of a double wall of Bethlehem steel sheet-piling, with concrete poured between the walls to form the island's perimeter.

The project is one part of the tremendous expansion of power facilities now being carried out by Niagara Mohawk Power Corp. in the upper New York State area. A 264-ft tower, erected on the island, will carry a high-voltage line joining the company's Huntley steam-electric station to the Falls.

Bethlehem produces a complete line of both sheet-piling and H-piles. If you would like copies of our illustrated catalogs on both these products, call the nearest Bethlehem sales office, or write to us direct at Bethlehem, Pa.



Sheet-piling island walls under construction. *General Contractor:* Herbert F. Darling. *Marine Contractor:* Merritt-Chapman & Scott Corp.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

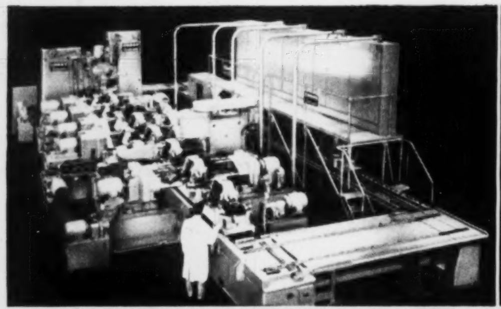
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributors* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

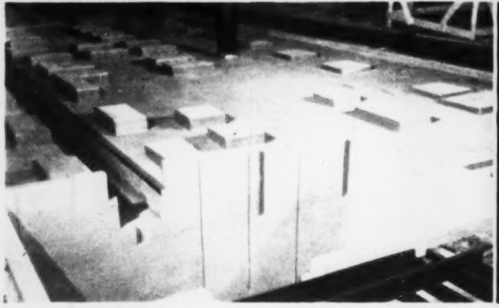
Complicated Concrete Forms
Eliminated by WELD-CRETE®
-the amazing liquid bonding agent!
Produces substantial savings for Eaton Manufacturing Company

The Problem: To install two 75-ton 25′ x 67′ milling and drilling machines on concrete floor of Cleveland plant. Machine had to rest on piers rather than floor itself, and forms required for single pour of these mounts were extremely expensive.

Weld-Crete the Answer: Weld-Crete was brushed on 36″ thick base floor at spots where 80 piers were to be located. With the simplest of forms, these 8″ thick piers were later poured with assurance of a permanent bond to the base. The $650,000 machines have operated on these mounts for over three years.



75-ton machine mounted upon 80 concrete piers permanently bonded by Weld-Crete to concrete floor base.



Shows some of 80 piers bonded to concrete base by Weld-Crete. Simple bonding replaced complicated forming, resulted in appreciable savings in installation of 75-ton machines shown above.

Whether you're installing new equipment, moving old, or repairing floors . . . Weld-Crete enables you to *permanently* bond new concrete *directly* to old . . . or *any* sound surface. No costly, time-taking chipping, drilling, roughening, acid washing or scarifying of concrete base. When used with quick setting cement topping, you can lay new floors, ramps, driveways, etc., and run heavy truck traffic over them the next day. The insurance of a permanent bond with Weld-Crete costs as little as 4c per square foot! Get fact-packed literature about Weld-Crete from your Weld-Crete dealer, see Sweet's File, or write us direct.

The use of Weld-Crete is protected by U. S. Patent 2,760,885

LARSEN PRODUCTS CORPORATION
Box 5756I Bethesda, Md.

For Bonding Plaster to any surface . . . ask for Plaster-Weld®

Water-Soluble Silicone To Protect Concrete

A water-soluble silicone water-repellant protects concrete surfaces on highways and bridges. Called XR-20, the new product is based on a "salt polymer" rather than a resin that would call for a petroleum solvent.

The repellent is shipped as a 20% silicone concentrate. It is made into a 2% ready-to-use solution by mixing with 11 parts of water. Silicones Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.

Front-End Rotary Broom Made for Crab Tractor

A front-end rotary broom is made for the four-wheel-drive, four-wheel-steer Napco Crab tractor. The sweeper is driven by its own gasoline engine. Speed of the broom is constant and independent of the tractor's speed.

The sweeper assembly is attached or removed quickly. Construction Equipment Division, Napco Industries, Inc., Minneapolis, Minn.

Fork Lift Truck Can Raise 3,000 Lb

A 3,000-lb capacity lift truck, the FTB 30-15, is powered by a 4-cylinder engine available in gasoline or LP fuel models. Two transmissions are offered: standard 2-speed constant mesh, or the optional power-shift torque converter drive.

Standard transmission produces 8 mph forward and reverse; torque converter drive, 9.2 mph. The truck can be turned in a radius of 64 in.

An "extra lift" mast, standard on the unit, gives maximum stacking height of 131 in. The mast provides 16 in. of free lift. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Diesel Engine Series Develops Higher Output

A new and higher output version of the D342 diesel engine is called the Series C. A new turbocharger helps the engine develop an intermittent horsepower rating without fan of 260 brake-hp at 1,300 rpm.

The engine is recommended for power excavating machines, batch plants, rock crushers and the D8 crawler tractor.

The electric set configuration of the new series develops a continuous rating of 150 kw, three-phase, 60 cycles at 1,200 rpm, with available voltage arrangements from 120 to 2,400. Caterpillar Tractor Co., Peoria, Ill.

(*New Products continued p. 94*)

NEW STRENGTH, NEW DRIVE CUT COSTLY DOWNTIME

U.S. ROYAL
FLEETMASTER
NYLON

New Cross-Lug U.S. Royal Fleetmaster Dual-Purpose-Nylon beats the tire hazards that can wreck tight schedules!

Contractors all over the country are finding out that using this great new U.S. Royal Fleetmaster Dual-Purpose reduces job delays due to tires. Its 52% stronger body, of exclusive Double-Strength Nylon cord, defies impacts that ruin ordinary tires. Its big, deep cross-lugs dig in for 35% greater traction, prevent spinning wheels, bogged-down trucks, broken schedules. See it for yourself. Call your U.S. Royal Dealer right now. And make sure to specify "U.S. Royal" on the next new equipment you buy! Available in tubed or tubeless construction.

U.S. ROYAL SAFETY 1st TRUCK TIRES

US RUBBER United States Rubber
Rockefeller Center, New York 20, New York

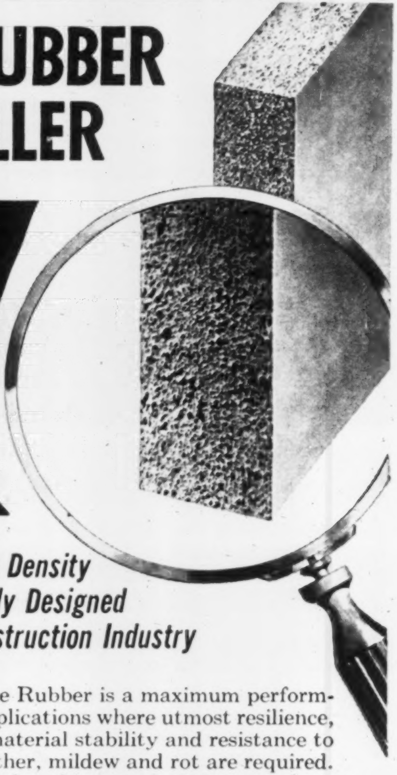
SERVICISED "CEMENTONE"®

SPONGE RUBBER JOINT FILLER

★ Non-Extruding...High Recovery After Compression

★ Weather and Rot Resistant

★ Gray Color Blends With Concrete



"Cementone" is a High Density Material, Especially Designed for the Construction Industry

Servicised "Cementone" Sponge Rubber is a maximum performance joint filler, designed for applications where utmost resilience, non-extrusion, high recovery, material stability and resistance to the deteriorating effects of weather, mildew and rot are required. It is also widely used in exposed architectural concrete such as bridges and overpass structures, abutments, walls, etc. where its neutral gray color blends well with the color of concrete.

Because of its compressibility, high resilience and color, "Cementone" is ideally suited for use in tilt-up construction at vertical column and panel butt joints. (below)

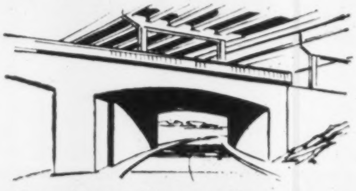
Made from high quality blown sponge rubber, uniform in thickness and density, "Cementone" is available in cut strips or sheets in standard thicknesses of ¼", ⅜", ½", ¾" and 1" in lengths up to 10 ft. For greater thicknesses, "Cementone" may be laminated.

TYPICAL APPLICATIONS

ARCHITECTURAL CONCRETE

"Cementone" is widely used in architectural concrete because its neutral gray tone blends with color of concrete.

BRIDGE ABUTMENTS, STRUCTURES



Complete resilience and non-extruding qualities of "Cementone" Joint Filler make it ideal for bridge abutments, retaining walls, etc.

Write for the Servicised Catalog

SERVICISED PRODUCTS
CORPORATION
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

Medium-Sized Road Grader Added to Equipment Line

A medium horsepower, medium weight motor grader cited as capable of heavy-duty work is now on the market.

The Model 145 is powered by a four-cylinder diesel engine that develops 80 hp at 1,800 rpm. The 21,450-lb unit has six forward speeds and three reverse speeds.

Its 12-ft moldboard is capable of 90 deg maximum bank cutting for back sloping highway cuts and ditch construction. ALLIS CHALMERS MANUFACTURING CO., MILWAUKEE, WIS.

Lightweight Hand Drill Features $\frac{3}{8}$ Inch Chuck

Extra capacity, light weight and ease of handling are the features of the new #318 Ball-Rite electric drill. The chuck will handle a $\frac{3}{8}$ in. drill. The entire unit weighs only $3\frac{3}{4}$ lb. A full four-finger pistol grip handle provides perfect control when in use. The motor is housed in a polished die-cast aluminum frame. The drill is available by itself or in a compact, complete 45 piece kit contained in a metal carrying case. CUMMINS PORTABLE POWER TOOL CO., MILWAUKEE, WIS.

Briefs . . .

• **Calculator-Slide rule** – Addiator-Slide Rule is a pocket-sized calculator that combines a 13-scale log-log slide rule on one side, and a small adding machine on the other. Cost, including carrying case and instruction book, is $9.95 for a 5-in. scale length; $18.95 for a 10-in. scale. HARRISON HOME PRODUCTS CORP., 565 FIFTH AVE., NEW YORK 17, N. Y.

• **Electronic flashing light**—A 7-in. transistorized flashing light for large construction and runway jobs is said to be waterproof, vaporproof and capable of operating continuously off its 6-volt battery for 2,200 hours. TRAFFIC EQUIPMENT CO., 2064 S. BANNOCK ST., DENVER 23, COLO.

• **Two-way radio**—Designed for use on the 21 channel allocations within the 26.96 to 27.23 megacycle band, this two-way radio is said to have a minimum range of one mile and a maximum as high as 30 miles. GONSET DIVISION, YOUNG SPRING & WIRE CORP., 801 S. MAIN ST., BURBANK, CALIF.

• **Truck-mixer**—A $5\frac{1}{2}$-cu-yd unit, it is made with a short wheel base for increased maneuverability. It is equipped with heavy duty transmission, a 100-gal

Plan to stay ahead...
MODERNIZE!

Coordinating "Umpteen" different suppliers

...is costly to you and your consultants

Save Time, Effort, Money with "Teamed" equipment

A multitude of suppliers, each with a product for your project, means endless conference hours coordinating equipment designs, delivery schedules, erection services. It means many extra phone calls, telegrams, voluminous correspondence!

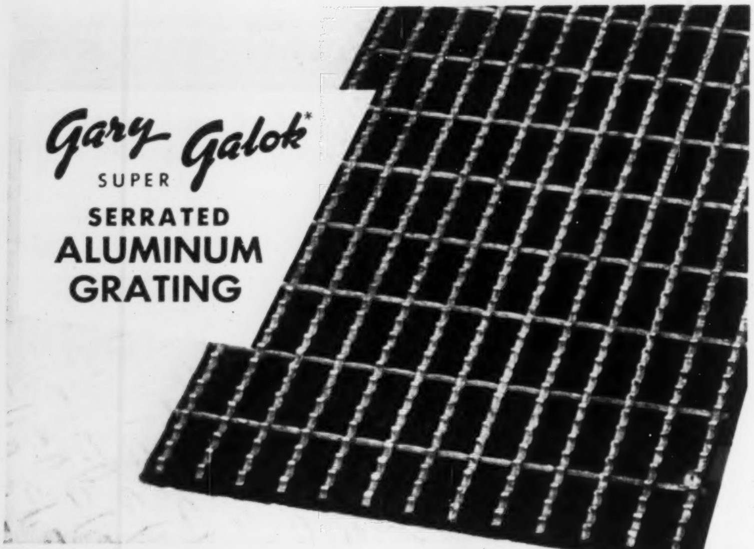
Here's an easy, efficient way to get most of the equipment for your project — pumps, motors, control, condensers, blowers, generators, etc. from *one source*. One inquiry and Allis-Chalmers public works specialists and product specialists coordinate all products to your project design and specifications. Allis-Chalmers assumes sole responsibility for equipment delivery and continuing field service. There's no "buck passing."

Cut out all the waste of time, effort and money involved in coordinating a multitude of suppliers by contacting your A-C representative—or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

"Teamed" Equipment from Allis-Chalmers — Pumps, motors, motor-generators, motor control, condensers, blowers, hydraulic turbines and generators, water conditioning, transformers, switchgear, butterfly valves, diesel engines.

ALLIS-CHALMERS A-C ALLIS-CHALMERS

A-5989-PW



Gary Galok*
SUPER
SERRATED
ALUMINUM
GRATING

POSITIVE FOOTING, LIGHT WEIGHT

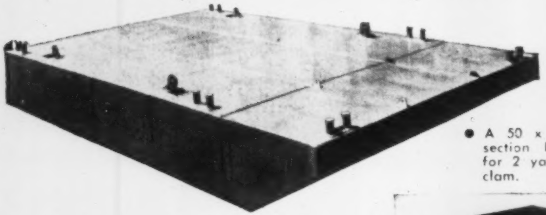
Serrations scientifically designed to provide maximum positive footing and traction. High strength to weight ratio, minimum deflection, maximum safety, corrosion resistant. Bars cannot turn, twist, loosen or fall out. Write for complete details. E-49

*Patents Pending

Gary SUPER Galok aluminum grating also available with plain bars. Both the serrated and plain types in sizes for every need.

ROCKWELL-STANDARD
CORPORATION
GRATING DIVISION
4004 E. Seventh Ave., Gary, Indiana

MANITOWOC
SECTIONAL BARGES



• A 50 x 30 foot four-section barge suitable for 2 yard dragline or clam.

• Easily transported by rail or highway.

• Assembled barge with crane and spuds.

★ Designed specifically for the contractor who has need for transporting his floating equipment in a short time with the least effort and expense. By quickly and easily bolting together any number of sections, the contractor has an extremely adaptable piece of equipment to provide an economical solution to any floating problem. Dragline, trench hoe or clamshell dredging, pile driving, crane lifting, pumping, pipe laying or floating equipment are some of the many uses of the versatile Manitowoc Sectional Barge.

Write for additional information and prices. Sold direct or through Manitowoc Engineering Corporation distributors.

MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WISCONSIN

flush tank and in-cab accessibility of mixer controls. Blaw-Knox Co., 300 Sixth Ave., Pittsburgh, Pa.

• **Trencher**—The M-3 trencher is said to have a 20,000-lb test digging chain, heat-treated teeth and a telescoping digging boom. Charles Machine Works, 684 B St., Perry, Okla.

• **Crane-excavator**—An improved Northwestern ¾-yd model includes a new independent worm hoist; true power load lowering; longer, wider crawlers; larger drums with greater cable capacity; larger uniform pressure swing clutches and grouped lubrication. Northwest Engineering Co., 135 S. LaSalle St., Chicago, Ill.

• **Outriggers**—Hydraulic-power outriggers that take only 76 seconds to adjust from travel to work positions are now available on Lorain Moto-Cranes. Each outrigger is controlled independently for easy adjustment to ground levels. When in place, they are automatically locked into position. Thew Shovel Co., E. 28th St. & Fulton Road, Lorain, Ohio.

• **Scaffold frame**—A lightweight, shallow-trussed end frame provides 6 ft of head room for easy passage through scaffolding. The 03CS frame, equipped with sidewall brackets, will provide three working levels. Patent Scaffolding Co., Inc., 38-21 12 St., Long Island City 1, N. Y.

• **Concrete blanket**—Fiberglas bonded with a thermo-setting resin and set between two 8-mil polyethylene sheets, forms a flexible and reusable curing blanket. The blanket is available in 1 and 2-in. thicknesses. Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

• **English theodolite**—Reading directly to one second of arc, the Tavistock Theodolite, Type II, is equipped with an internal focusing telescope, spirit levels, centering device and optical plummet for centering over ground marks. Manufactured by Cooke, Troughton & Simms, Ltd., its vertical circles are graduated every 20 minutes on glass annuli. Precision Instruments, Inc., Troy, N. Y.

• **Concrete conveyor**—The "Faircrete," a 40-ft conveyor, carries concrete from mixer to form at the rate of 40 cu yd per hr at a maximum height of 26 ft. Fairfield Engineering Co., 324 Barnhart St., Marion, Ohio.

• **Truck bodies**—A series of truck bodies designed for homebuilders features specialized outside compartments for equip-

PANEL NO 1
TRANSFER PANEL

Typical A-C pumping installation is this one in the District No. 2 Water Works at Pueblo, Colorado. Motors and control are also supplied by Allis-Chalmers.

From this cubicle comes advance proof of pump performance

This master control room of Allis-Chalmers pump test floor is far removed from public works installations. Yet, engineers working here know exactly what your needs are — and which Allis-Chalmers pump will best do the job.

Suction heads, discharge heads, gpm capacity, required horsepower plus other essentials for satisfactory pumping performance are all proven in advance.

Performance testing like this is only one reason why A-C is recognized as a full-line leader in meeting the pump needs of municipals. "Teamed" motors and control; customized standardization of parts and materials; engineering assistance and nationwide service are others.

Whatever your requirements in centrifugal pumps — from the smallest to 250,000-gpm giants — contact your A-C representative or distributor. Or write to Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Plan to stay ahead... MODERNIZE!

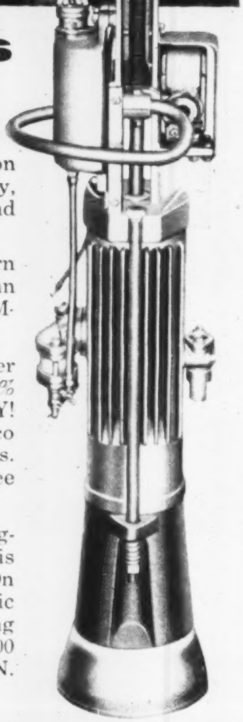
ALLIS-CHALMERS A-C ALLIS-CHALMERS

A-5981-PW

ON ROAD WORK–

Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N.Y. The Barco Rammers are owned by S. J. Groves & Sons Co., Syracuse, N.Y.
(Photo: CONSTRUCTIONEER)

SOIL
by
BARCO
COMPACTION



Barco Rammers are Essential!

CHECK THE RECORDS for *soil compaction* on every top ranking highway, toll road, thruway, or freeway built in recent years and you will find Barco Rammers!

The key to better construction—No modern trend has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects.

Easily meet rigid specifications—In test after test, Barco Rammers have delivered 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful in restricted areas. ONLY Barco can produce specified high degree compaction on lifts up to 20 inches.

Get jobs finished on time—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. ASK FOR A DEMONSTRATION.

FOUNDED 1908
BARCO
PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
514E Hough Street • Barrington, Illinois

BARCO RAMMER *for High Degree Soil Compaction*
BARCO VIBRA-TAMP *for Granular Fill and Bituminous Surfacing*

ment, tools, parts and materials. Reading Body Works, Inc., 420 Gregg Ave., Reading, Pa.

- **Dustless drill**—The LHV45, a medium weight drill, eliminates dust by drawing cuttings through hollow drills into the drill chuck and out the side of the chuck housing to a collector tank. Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis.

- **Sideboom**—Designed for the Oliver 770 industrial rubber-tired tractor, the Midwestern boom has a lifting capacity of 7,000 lb. It has all-hydraulic operation and a friction clutch. Midwestern Manufacturing Co., 4645 Southwestern Blvd., Tulsa, Okla.

- **Blade control**—Transistors and printed circuits are used in the Preco automatic grader blade control. The unit keeps one end of a grader blade under automatic control so that the operator's attention can be concentrated on the other end. Preco, Inc., Construction Equipment Div., 6300 E. Slauson Ave., Los Angeles 22, Calif.

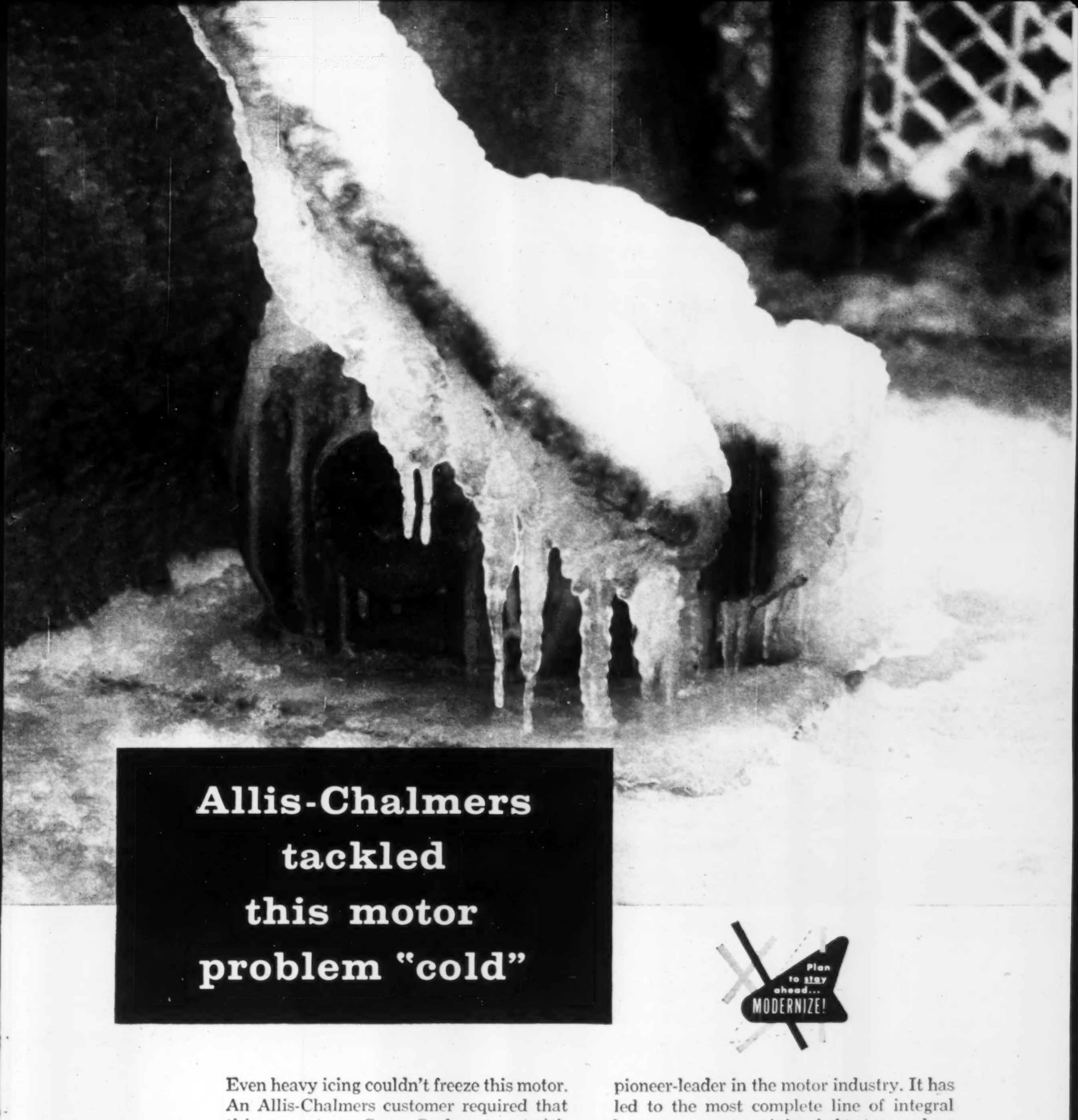
- **Bearings**—"Sound-conditioned" pillow block ball bearings are offered for quiet operation. A synthetic rubber cushion between the bearing's outer ring and the pillow block housing is designed to insulate against vibration and suppress noise. The units come in five shaft sizes from ½ in. through 1 in. Hoover Ball & Bearing Co., 5400 S. State Road, Ann Arbor, Mich.

- **New engine**—Allis-Chalmers is producing a new 4-cylinder gasoline engine for its Model D motor grader. The motor provides 58 hp at 1,650 rpm for the 8,800 lb class grader. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

- **Traffic cones**—A complete line of traffic cones, adapters and accessories made of polyvinyl chloride is available. Interstate Rubber Products Corp., 908 Avila St., Los Angeles 12, Calif.

- **Guard rail**—A shallow beam guard rail for highways comes in 9- and 12-gage steel. It has prefitted drilled holes and slots for easy erection. Finish is phosphatized rust-inhibitive lead chromate. Syro Steel Co., Girard, Ohio.

- **Dozer edges**—Multisection blade edges for the D8 and D9 angling and straight dozers are made by Caterpillar. The two- and three-piece edges save money when uneven blade edge wear is present; worn sections can be reversed left-to-right or replaced individually. Caterpillar Tractor Co., Peoria, Ill.



Allis-Chalmers tackled this motor problem "cold"

Plan to stay ahead... MODERNIZE!

Even heavy icing couldn't freeze this motor. An Allis-Chalmers customer required that this open-type *Super-Seal* motor (with *Poxeal* insulation) start even though embedded in ice.

The successful tests were conducted in the A-C Motor Laboratories where customers' motor needs point the way to continuous development programs.

Research, combined with testing of this type, has established Allis-Chalmers as a pioneer-leader in the motor industry. It has led to the most complete line of integral horsepower motors; it has led to tremendous acceptance of such A-C developments as *Synduction* and tube-type motors, and now *Super-Seal* motors.

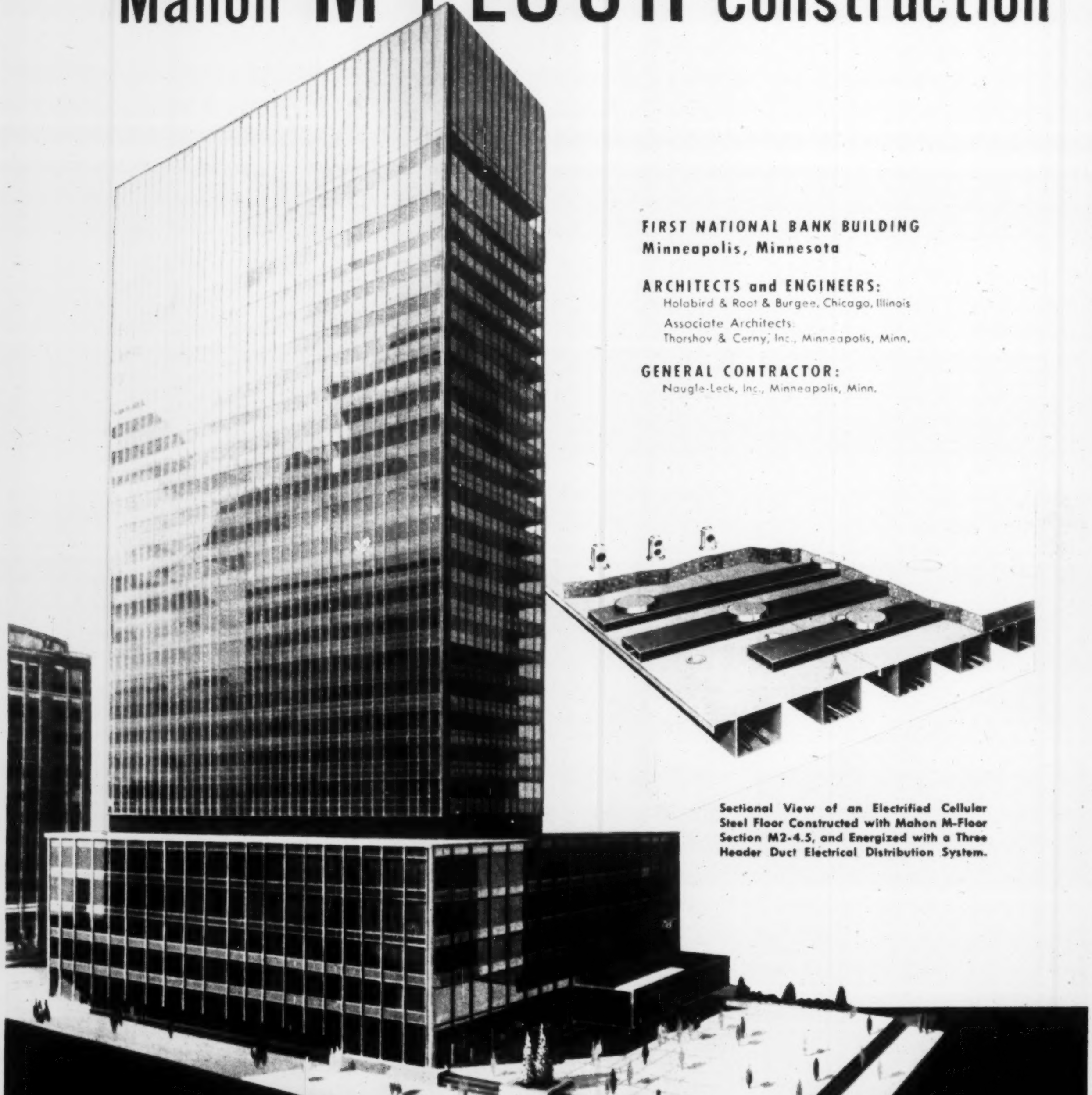
Water and sewage works can benefit from this pioneer-leadership. *Contact your A-C representative or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.*

Poxeal, Synduction and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS

A-5956-PW

Mahon M-FLOOR Construction



FIRST NATIONAL BANK BUILDING
Minneapolis, Minnesota

ARCHITECTS and ENGINEERS:
Holabird & Root & Burgee, Chicago, Illinois
Associate Architects:
Thorshov & Cerny, Inc., Minneapolis, Minn.

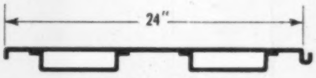
GENERAL CONTRACTOR:
Naugle-Leck, Inc., Minneapolis, Minn.

Sectional View of an Electrified Cellular Steel Floor Constructed with Mahon M-Floor Section M2-4.5, and Energized with a Three Header Duct Electrical Distribution System.

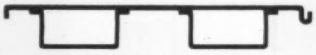
Safeguards This Imposing Structure Against Electrical Obsolescence!

Mahon M-FLOOR Cel-Beam Sections Provide Electrical Raceways Under Every Square Foot of Floor Surface

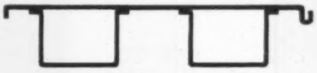
MAHON
M-FLOOR SECTIONS



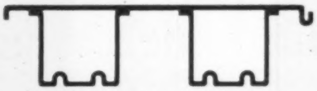
SECTION M2-1.5
CEL-BEAM DEPTH 1½"



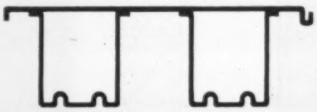
SECTION M2-3
CEL-BEAM DEPTH 3"



SECTION M2-4.5
CEL-BEAM DEPTH 4½"



SECTION M2-6
CEL-BEAM DEPTH 6"



SECTION M2-7.5
CEL-BEAM DEPTH 7½"

A BETTER BALANCED, MORE EFFICIENT SECTION FOR ANY STRUCTURAL REQUIREMENT

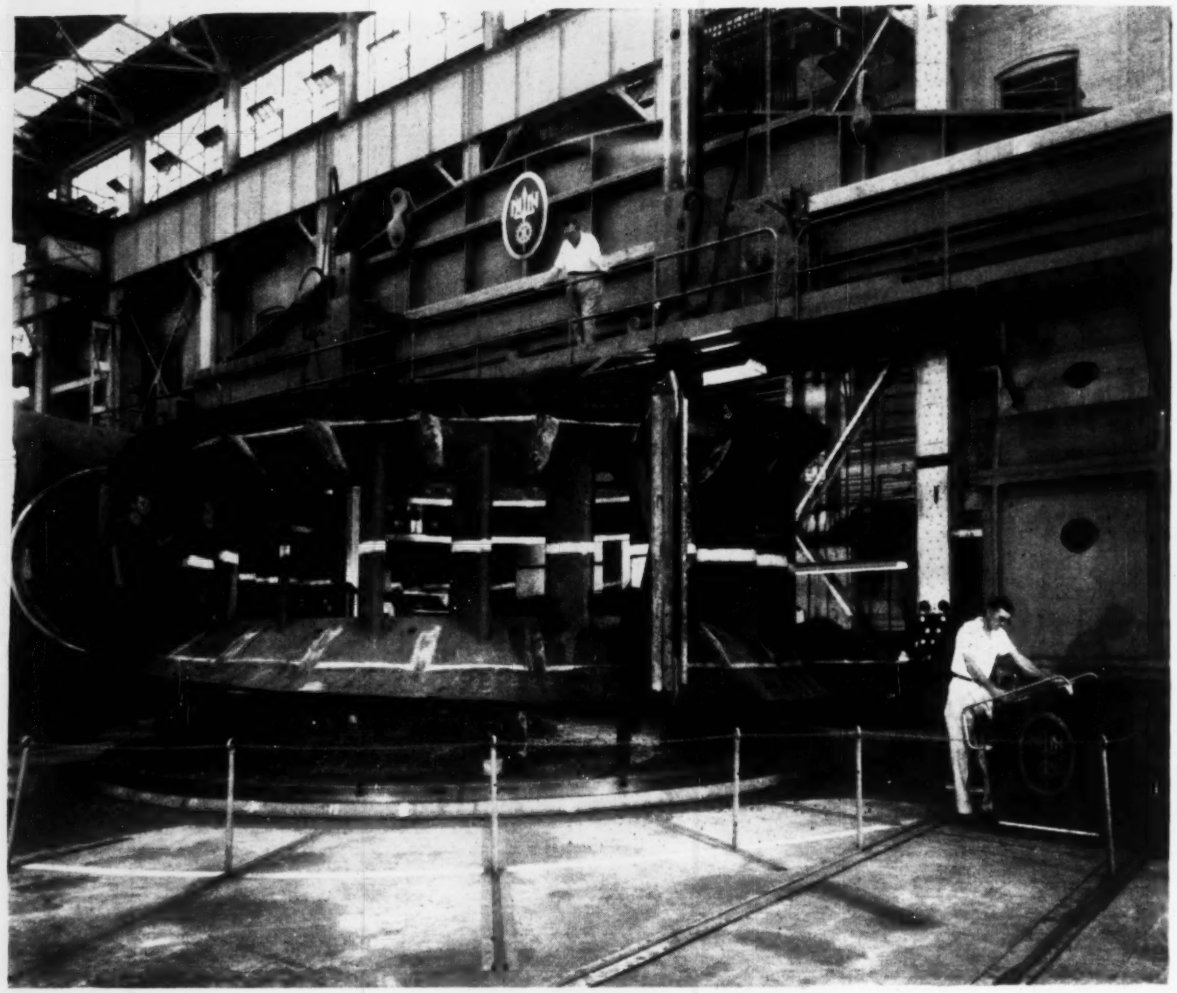
☆ **OTHER MAHON BUILDING PRODUCTS and SERVICES:**

- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
- Steel Roof Deck
- Long Span M-Decks (Cellular or Open Beam)
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

MAHON



42 ft. boring mill-rough cuts a stay ring for one of the world's most powerful hydraulic turbines.

Newport News builds six king-size turbines for Niagara Power Project

These skilled Newport News machinists are milling a stay ring for one of six 200,000 hp. Francis-type hydraulic turbines. Before they're finished, they'll turn out five more turbines—the world's most powerful—for the Lewiston Power Plant of the Niagara Project.

Newport News has not only the men, but the facilities to take a job like this in its stride . . . your job, too. For example, the 42 ft. boring mill pictured above was designed and built at Newport News.

The large engineering and technical staffs, acres of iron, brass and steel foundries, five huge machine shops, and additional specialized equipment make Newport News a leader in the production of hydraulic turbines, valves, gates, penstocks, and other water power equipment you need.

Consult Newport News engineers on preliminary design recommendations at no obligation.

Engineers . . . Desirable positions available at Newport News for Designers and Engineers in many categories. Address inquiries to Employment Manager.

Newport News
Shipbuilding and Dry Dock Company
Newport News, Virginia

Publications

Control systems—"Automatic Controls Systems Guide for Architects and Engineers," describes electric, electronic, and electronic automatic control systems for heating, ventilating and air conditioning. 8-page brochure No. F-8944. Barber-Colman Co., Rockford, Ill.

Color kit—A color kit for architects, designers, builders and maintenance men, shows how to use color scientifically to promote better seeing conditions. It has a set of recommended color standards for various institutions. Colorizer Assoc., 345 North Western Ave., Chicago 12, Ill.

Ductile iron—An illustrated catalog, "American Ductile Iron," describes the complete line of ductile iron products manufactured by the American Cast Iron Pipe Co. The book gives data on grades, specifications, dimensions, weights, uses and applications. 36 pages. American Cast Iron Pipe Co., P. O. Box 2603, Birmingham 2, Ala.

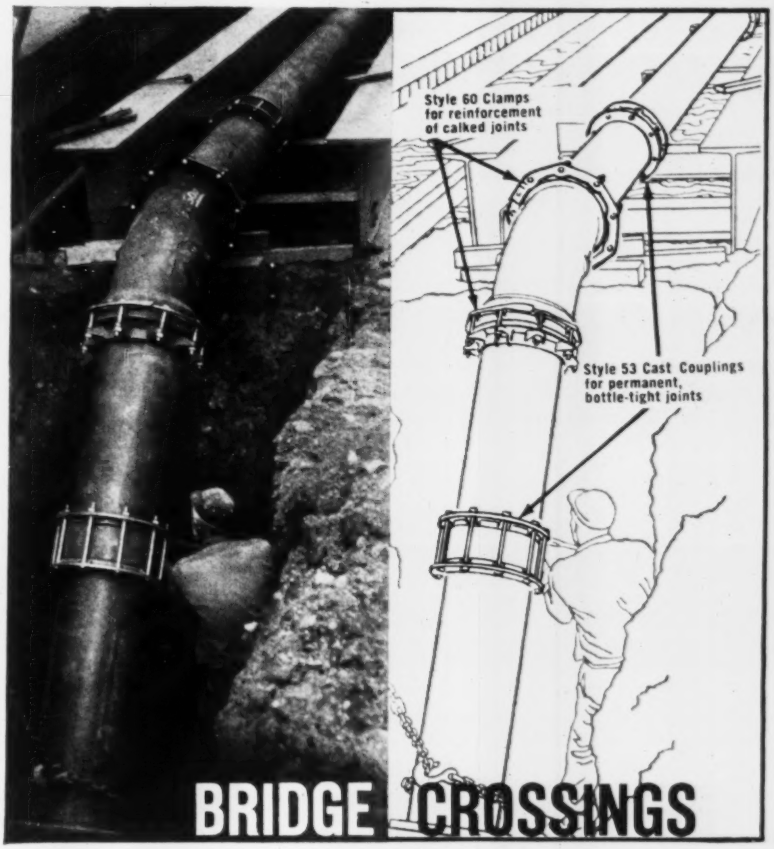
Perforated pipe—A catalog that deals with perforated pipe for controlling ground water is offered. Discussed are single-treatment control; methods of solving subsurface drainage problems; cost; pipe selection; and recommended methods of installation. Also included are drawings of standard fittings, tables, and photographs of representative installations. Catalog P.P.-8358, 28 pages. Armco Drainage & Metal Products, Inc., Middletown, Ohio.

Fork lift—Complete fork and tractor capacities and specifications included in description of the "Hi-Lifter." Bulletin KM-615. Kwik-Mix Co., Port Washington, Wis.

Interchangeable engines—The 4-, 6- and 8-cylinder engines designed for use with gasoline, kerosene, LPG or natural gas are described. Basic installation diagrams, general data, power chart and detailed specifications included. 2-page bulletins E301A, E305A. Hercules Motors Corp., Canton, Ohio.

Steel paving forms—A complete line of steel forms for paving streets, roads, sidewalks and airports. 4-page folder. Clark Industries, Construction Equipment Div., 275 E. Fifth Ave., Columbus, Ohio.

Surface treatment manual—A practical guide to practices and methods in selecting and applying surface treatment to roads. A thorough and easy-to-read "how-to" exposition. Photographs,


Style 60 Clamps for reinforcement of calked joints
Style 53 Cast Couplings for permanent, bottle-tight joints
BRIDGE CROSSINGS

MADE FAST AND SIMPLE

...with Dresser® Couplings

Getting this water supply main over the stream bed was made fast and simple by using plain end cast iron pipe, Dresser Couplings and Dresser Bell-Joint Clamps to reinforce the calked joints at the fittings. The whole job was accomplished in about one working day. Available random lengths of pipe were used in the crossing.

There are many long-life advantages built into a Dresser Coupled bridge crossing. The joints are non-rigid, allowing ample leeway for the inevitable vibration, ground settlement strains and other stresses inherent to tough locations. Dresser's exclusive gasket compounds have permanent resilience, assure bottle-tight sealing that lasts the life of the line.

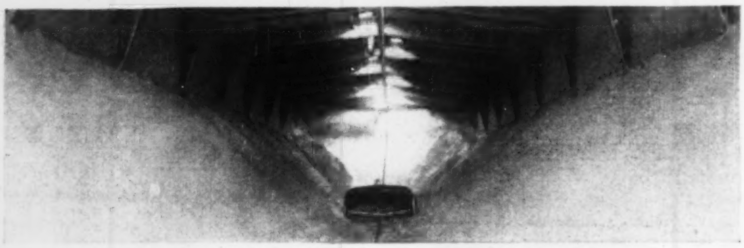
On your next bridge crossing, or on *any tough spot,* do it the fast and simple way. *Install it – forget it* with maintenance-free Dresser Couplings.

Bradford, Pennsylvania
Chicago
Houston
New York
S. San Francisco
Toronto & Calgary

DRESSER
MANUFACTURING DIVISION
ONE OF THE DRESSER INDUSTRIES ®

SAUERMAN NEWS briefs

SAUERMAN BROS., INC.,
632 South 28th Avenue, Bellwood, Illinois
LInden 4-4892



Self-Unloading Vessels

Sauerman DragScrapers provide efficient clean-up and low-cost cargo unloading capacities from 100 tph. (or less) to over 2000 tph. They are a component part of many ship unloading installations.

The systems are designed to suit the requirements of a particular vessel and are being incorporated in the construction of new self-unloaders as well as in the conversion of existing vessels.

DragScraper unloading allows maximum space for cargo stowage. The cargo rides low in the hold providing greater stability and increased carrying capacity over cargoes which are hoppered high.

Sauerman ship unloaders are economically handling rock, ore, sand, coal and cement. One man controls the entire operation from a convenient station overlooking the hold and away from any hazards of material or working area.

(Condensed from Marine Brochure MB-1)

Digging a Trench Under Water

Digging a trench across the Big Calumet River was economically handled by a ¾-yd. Crescent DragScraper used with a ½-yd. crane. The crane's hoisting line was used as a track cable for the DragScraper and single wheel carrier. This cable was dead-ended on the opposite shore.

To permit gravity return of the DragScraper, the crane was placed upon a built-up mound of dirt and the boom raised to its highest point. Spooling capacity of the crane's load drum was just enough to allow the DragScraper to dig the trench the width of the river. Depth of the trench was about 6 ft. at an average depth of 12 ft. below water.

(Condensed from Sauerman News No. 151)

Handling Phosphate Ore

Ore concentrate is stockpiled and reclaimed as required to the foot of a bucket elevator by a Sauerman DragScraper Machine at a Southern chemical plant.

A self-propelled tail tower travels around the perimeter of the stockpile. The tower is shifted to change the line of operation. DragScraper haul length is 400 ft. The operator's station for the Sauerman hoist is located above the conveyors to give a clear view of the pile.

(Condensed from Sauerman News No. 151)

MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.

diagrams and tables. 58-page manual. American Bitumuls & Asphalt Co., 320 Market St., San Francisco 20, Calif.

Lightweight pipe—Complete line of pipe, fittings, flanges and connections. Standard specifications are given for spiral-weld pipe from 4 in. to 30 in. dia. Illustrations show one-piece couplings, welding flanges, and other types of connections for lightweight pipe. 8-page Bulletin No. 59. Naylor Pipe Co., 1230 E. 92 St., Chicago 19, Ill.

Panel products—New Editions of "Masonite Panel Products for Interior Applications" and "Masonite Panel Products for Exterior Applications" include product descriptions, table of properties, lists of available sizes. 20 pages and 12 pages respectively. Service Bureau, Masonite Corp., 111 West Washington St., Chicago 2, Ill.

Welding—Catalog of welding products combined with a guide to welding practice. "Welding Guide and Catalog." 32-page brochure. Arcos Corp., 1500 South 50th St., Philadelphia, Pa.

Paint manual—"Architectural Specification Manual," ninth edition, is a reference of painting procedures, specifications, and color plans. Pratt & Lambert-Inc., 75 Tonawanda St., Buffalo 7, N. Y.

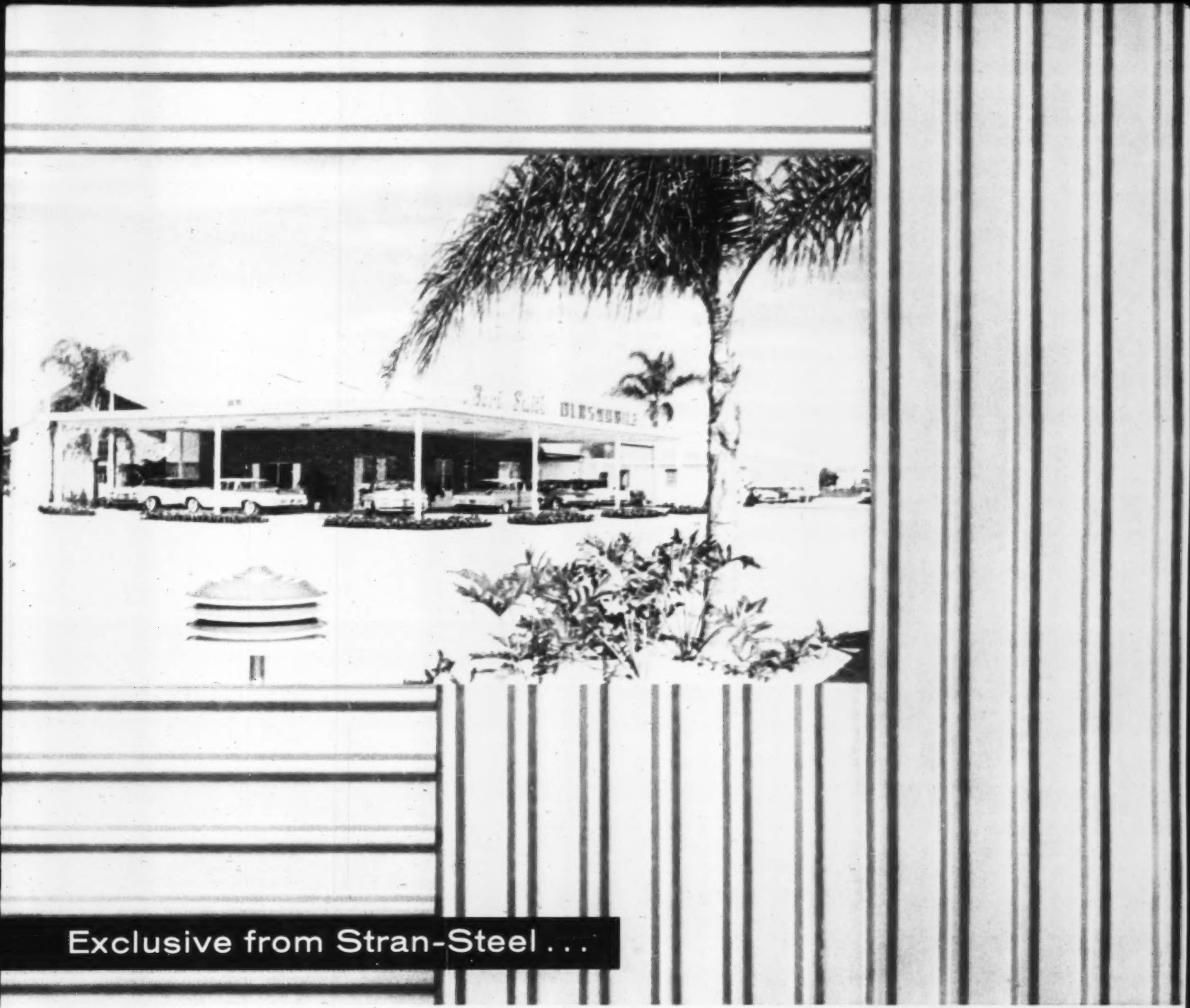
Cast Iron—Technical information covers specifications, grades, dimensions and weights, uses and applications, including underground high pressure gas and water service mains up to 48-in. dia. of American Ductile Iron. New 36-page illustrated catalogue. American Cast Iron Pipe Co., Birmingham, Ala.

Plastic panels—Technical data and construction details about fiber-glass reinforced plastic panels. 4-page brochure No. 144. Filon Plastics Corp., 2051 E. Maple Ave., El Segundo, Calif.

Water chiller—Acme Model HF packaged water chillers described in 8-page catalog No. 535; smaller and lighter Acme Model DF packaged water chiller, described in 8-page catalog No. 534. Acme Industries, Inc., Jackson, Mich.

Welding electrodes — Procedure guide for Lincoln manual arc welding electrodes for hardsurfacing and for welding stainless steels, non-ferrous metals and cast iron. 20-page bulletin No. 7000.2. Lincoln Electric Co., Cleveland 17, Ohio.

(*Publications continued p. 107*)



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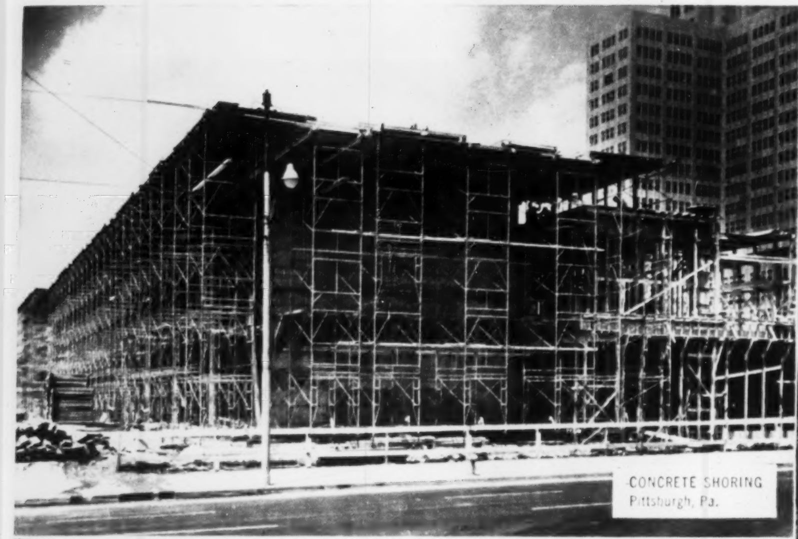

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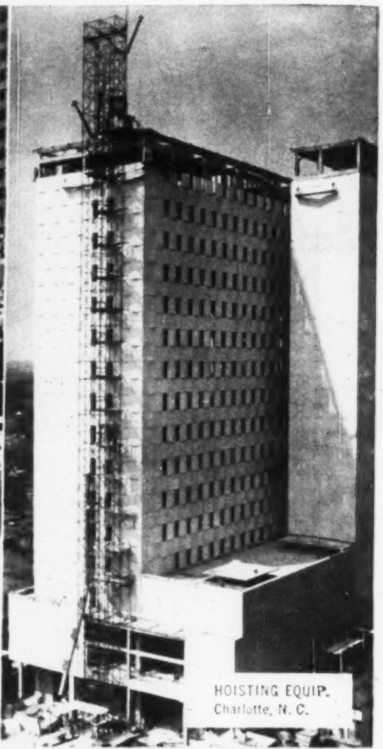

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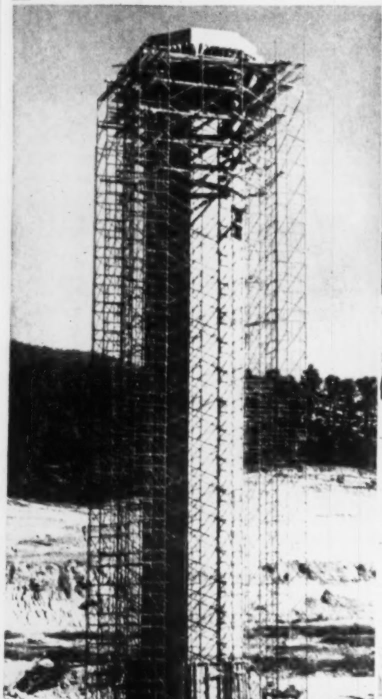

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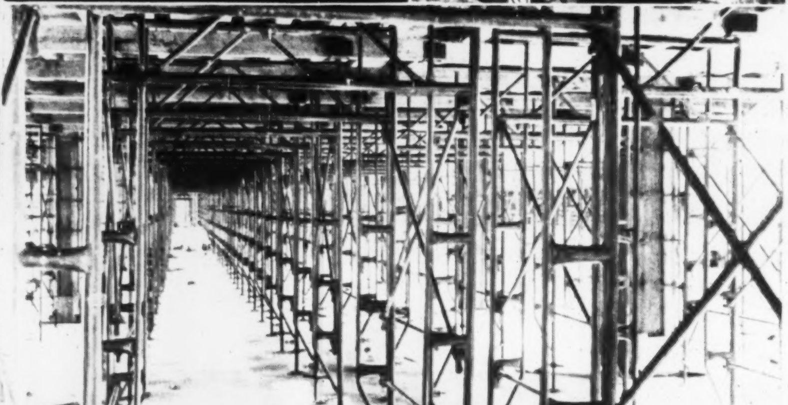

CONCRETE SHORING
Great Lakes, Ill.

Synthetic rubber—Illustrations of various uses for synthetic rubber products in construction work and construction equipment. 12-page booklet. , ELASTOMERS NOTEBOOK NO. 85, ELASTOMER CHEMICALS DEPT., E. I. DU PONT DE NEMOURS & CO., WILMINGTON 98, DEL.

Blacktop equipment—Construction and maintenance equipment for roads and highways, including asphalt plants, bituminous distributor, kettles, brooms, supply tanks and rollers. 24-page catalog. JJ-1, LITTLEFORD BROS., INC., 453 E. PEARL ST., CINCINNATI 2, OHIO.

Trench digger—A discussion of the capabilities of the "Trenchliner 130" is the subject of a 4-page illustrated bulletin. No. KP-609, PARSONS CO., P. O. BOX 431, NEWTON, IOWA.

Cableways—Eight torque converter equipped Slackline Cableway installations are described and illustrated with pictures and layout drawings. 12-page booklet TC-1, SAUERMAN BROS., INC., DEPT. E-21, 623 S. 28TH AVE., BELLWOOD, ILL.

Castings—Complete line of metal casting and tables of physical properties of types of metals available. 32-page pamphlet #35, MEEHANITE METAL CORP., 714 NORTH AVE., NEW ROCHELLE, N. Y.

Cranes—Details of components of model 38-A-1 heavy duty crane. 6-page folder. LITTLE GIANT CRANE & SHOVEL, INC., E. 16TH ST. AND HOWARD DRIVE, DES MOINES, IOWA.

Stabilizer plant—Description of a basic pugmill unit to which auxiliary equipment may be added to provide either a stationary or portable set up. 6-page Form #672, PIONEER ENGINEERING, DIVISION OF POOR & CO., 3200 COMO AVE., MINNEAPOLIS 14, MINN.

Tractor equipment—Illustrations and descriptions of attachments and accessories to increase versatility and working capabilities of Allis-Chalmers crawler tractors and motor graders. 12-page MS-1189, CONSTRUCTION MACHINERY DIV., ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

Parts exchange program—Explanation of Caterpillar equipment repair through the use of basic assembly replacement. 8-page booklet. ADVERTISING DIVISION, CATERPILLAR TRACTOR CO., PEORIA, ILL.

Washing plant—Description of a semi-

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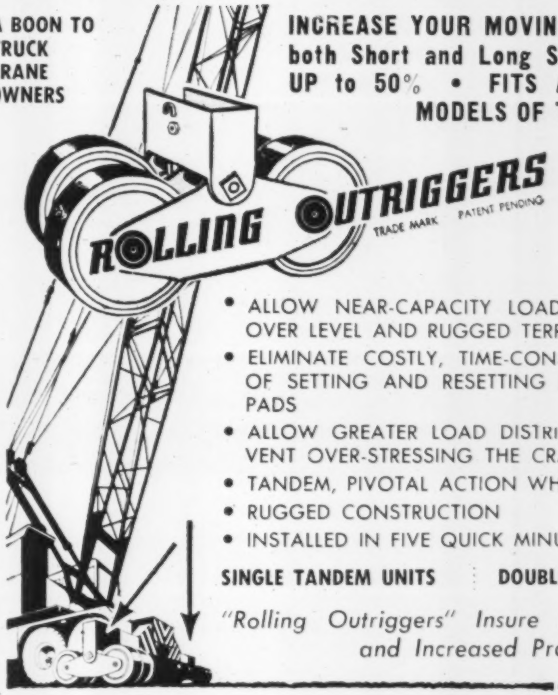

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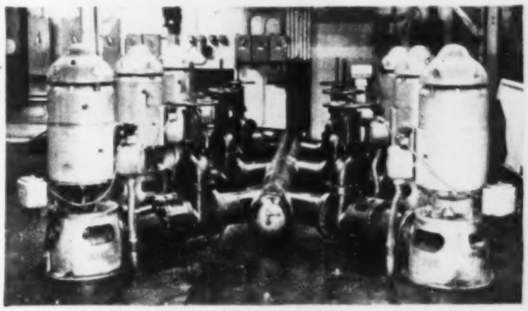

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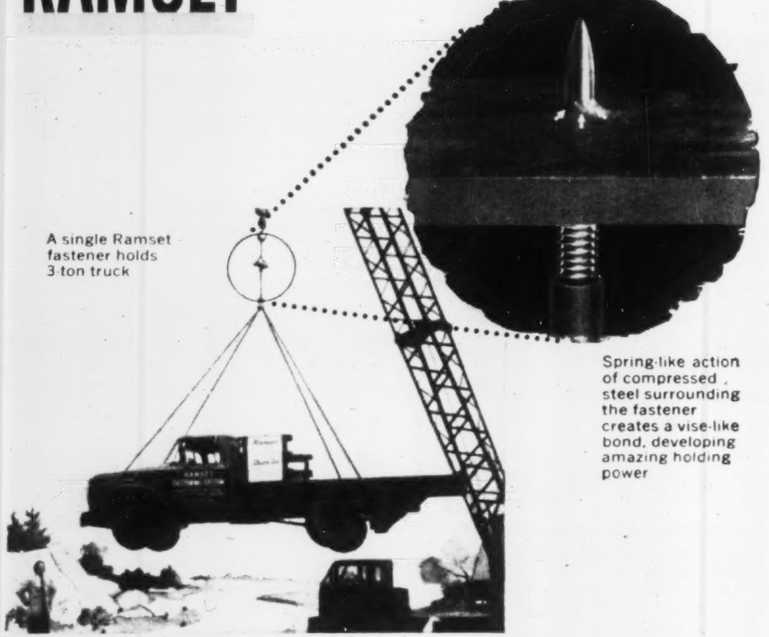
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portable plant for washing and sizing rock, gravel and sand. 8-page bulletin. Pioneer Engineering, Division of Poor & Co., Inc., 3200 Como Ave., Minneapolis, Minn.

Pipeline backfiller – Details of the dimensions, construction and capabilities of the Cleveland 190 backfiller. 6-page folder Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio.

Truck crane—A 60-ton truck crane and its components and accessories is described and illustrated. 8-page pamphlet. Manitowoc Engineering Corp., Manitowoc, Wis.

Air motor jacks—a series of industrial and construction applications for a line of air motor jacks is illustrated. 6-page Bulletin 435-IJ. Customer Service Dept., Joyce-Cridland Co., 2027 E. First St., Dayton 3, Ohio.

Log loader—Outlines of results of field tests of a diesel-powered tractor-crawler unit designed for log loading. Specifications are included. Brochure. Eimco Corp., P. O. Box 300, Salt Lake City 10, Utah.

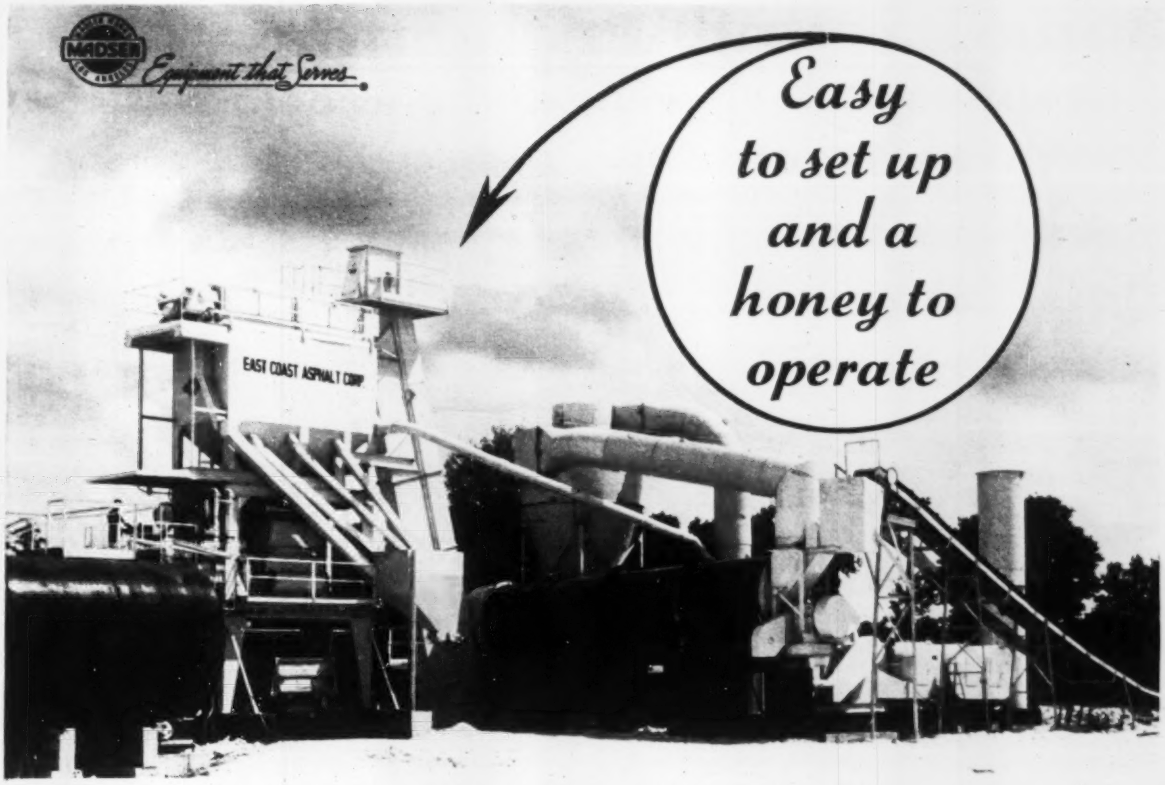
Lift truck tire requirements—Recommended tire sizes for maximum stability of industrial lift trucks. Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15; Pa.

Street and highway repair—Illustrated description of the process of patching pavement holes by the cold patch method. 24-page booklet. The Texas Co., Asphalt Sales Division, 135 East 42nd St., New York 17, N. Y.

Barricades—A complete line of all-steel barricades and traffic control devices. 12-page brochure. Traffic Equipment Co., 2064 S. Bannock St., Denver 23, Colo.

Gratings—Examples of installation of both welded and single-piece gratings, engineering data for erection and load charts. 24-page booklet. Products Division, The Globe Co., 4000 S. Princeton Ave., Chicago 9, Ill.

Aluminum products—"Reynolds Mill Products" brochure lists specific properties including: alloy and temper designations; fatigue and shearing strengths, and various alloys available in foil, sheet and plate, wire, rod and bar, tubing and pipe, extruded and structural shapes. 18 pages. Reynolds Metals Co., Dept. PRD-1, Box 2346, Richmond, Va.



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This plant is capable of producing up to 200 T.P.H. on a 45 second charge-mix-discharge cycle.

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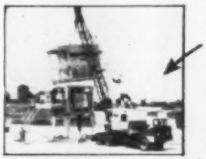

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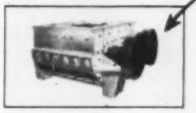

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After 30 months as a consultant, Dean Wachter comes . . .

Back to the Blackboard

At Room 103, Hawaii Hall, on the campus of the University of Hawaii, the sign is back on the desk.

"Dean Wachter," it says.

It had been tucked away for more than two and a half years.

First the dean went off to New York City on a sabbatical leave and worked as a consulting engineer with the firm of Howard, Needles, Tammen & Bergendoff.

During the last six months of 1956 he worked on a flood control project in Connecticut (where 200 bridges had just been wiped out in floods), and he worked on the preliminary report phase of the Interstate for Virginia.

Near the end of his sabbatical leave, a radiogram came to New York from the governor of Hawaii asking him to take over as Superintendent of Public Works for the Territory, a job that also carries with it the titles Chief Highway Engineer and Chairman of the Board of Harbor Commissioners.

He accepted, but only for two years.

Last February his two years were up and he went back to the University, which felt he was urgently needed to give direction and growth to a school that had four acting deans in his absence.

He is now dean of the new College of Engineering, which replaces the catch-all College of Applied Science he headed earlier.

Is he glad to be back?

Is he glad to have had his private and public employment?

Is actual practice an eye-opener to a man who had spent most of his professional career teaching (at Clemson, Penn State and Hawaii) or in the Army?

Is it much of a shock to cope with a staff of hundreds and a budget in tens of millions compared to running a faculty of 15 and a student body of 750?

There were surprises, the dean confessed recently.

There also were benefits, changed points of view and new outlooks.

After campaigning for and helping plan $200 million worth of new highways, a $5-million terminal for Honolulu harbor and a $25-million jet airport, there was certainly a new appreciation of the importance of transportation to Hawaii—land, sea and air.

But that wasn't the biggest surprise.

Nor was political pressure. Somewhat unexpectedly, that was applied almost entirely on little matters, only rarely on big ones, he says. One fight over a drainage ditch near a local theatre involved lawyers, legislators and a series of reports to the governor.

The brightness of the public spotlight was something else again. Public attention was to be expected, but the degree of it was unexpected.

"After experiencing it and thinking about it, I'm not as surprised as I first was.

"Certainly the public has a right to know."

But newspapers, community groups, explaining projects to affected citizens—these things took 25% of his time, at least, he says.

The University of Hawaii curriculum is going to be a little different as a result of the dean's past two years.

He's more than ever convinced of the need for schooling students soundly in the basic sciences. "A graduate must be well-founded in fundamentals so he can use those fundamentals in any direction he must go," he says.

And in the humanities: "We don't want to produce just a technician."

And in communication: "We need a better ability to communicate so that we can have better understanding with the public at large as well as the guy working next to us."

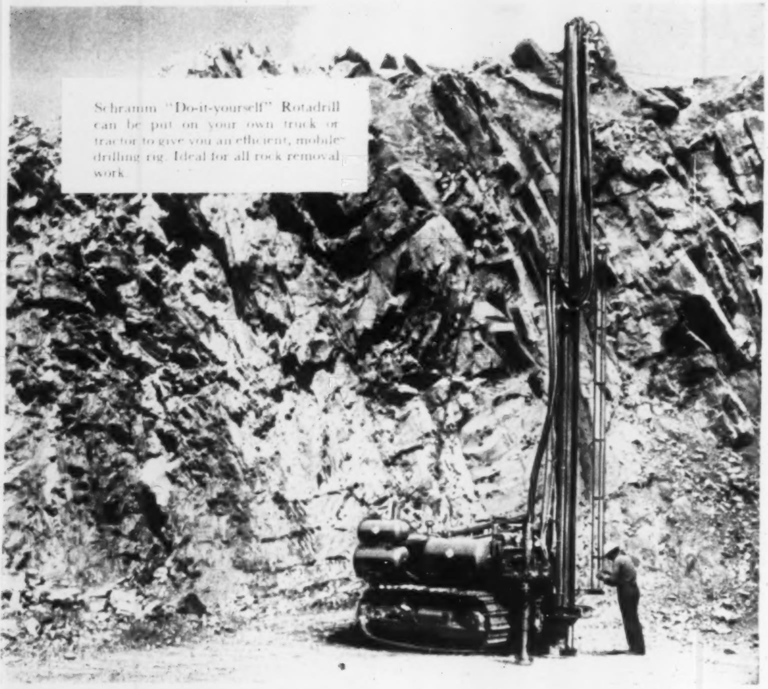
He is convinced, too, that he and his fellow engineers and the student engineers his school turns out must take a bigger part in community affairs in order to communicate ideas and contribute an engineering point of view on pertinent topics. For the same reason, he'd like to see more engineers, as individuals, go into politics and into the legislature.

From his hillside office in Honolulu he reads of the Hawaii legislature (in session downtown until May) considering bills to reorganize the Public Works Department.

He hopes none will pass that will substitute political control of the department's long-range planning for the present responsibility placed on the Public Works Superintendent and Highway Engineer.

"There can and should be adequate administrative and legislative review of all decisions," he says, but he feels very deeply that those states that have the best highway programs are those where long-range planning decisions are kept free of politics.

There's just a faint suggestion he'd



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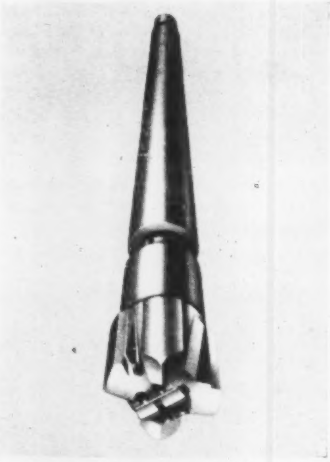


Schramm Rotatool converts Rotadrill for fast bottom-hole percussion drilling in hard rock. Conversion from rotary drilling to Rotatool is as quick and easy as changing steels.

be glad to trot down to a legislative hearing and expound and defend this point of view.

But there are no regrets, Dean Wachter says, about having entered the public arena—or having left it as planned.

He feels both he and the university have gained from his experience. He feels all faculty people should follow one of two courses: teach and be in research, or teach and be active in a profession.

Education is his first love, but even while back at the University he will continue as a consulting engineer for Harland Bartholomew and Associates in Hawaii.

If he had his public service to do all over again, would he? Of course.

Which takes more time? About the same, but in the academic atmosphere you're a little freer to decide what you'll do with your time.

Experts Gather

EJC forms study panel on transportation policy

Engineers Joint Council is now pondering what it can do to help form a positive national transportation policy.

An exploratory panel met under the council's aegis in New York. It decided to proceed with studies aimed at an EJC statement of broad basic principles against which present and future national transportation policy might be measured.

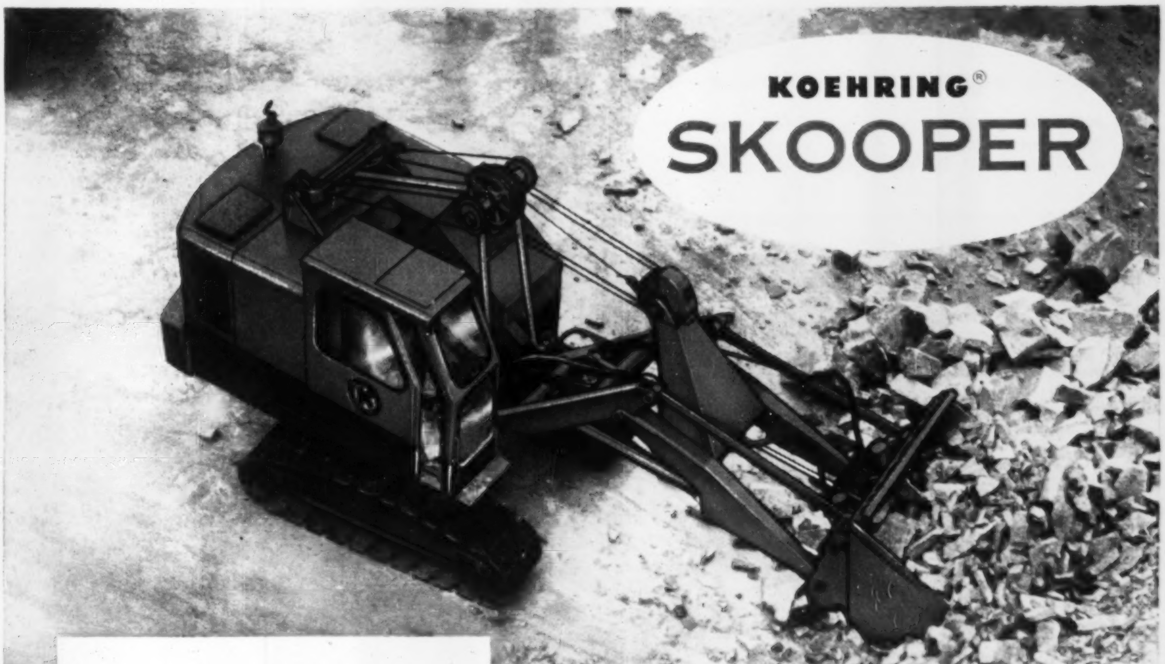
Called together by EJC's president, Enoch R. Needles, the panel represented all major fields of transportation—airways, highways, pipelines, rail and waterways.

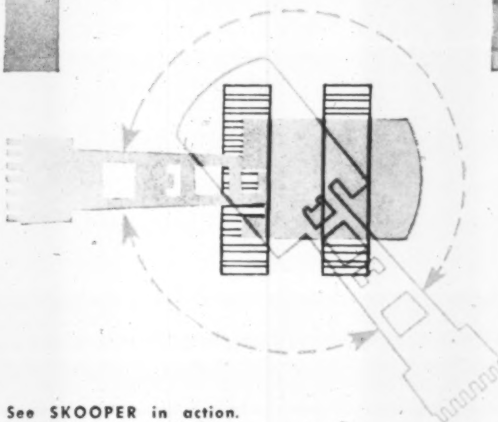
The 15 panel members present elected Mr. Needles temporary chairman and empowered him to appoint a steering committee representing the five major segments of transportation.

The steering committee will study existing statements on transportation policy and determine the framework for operation of the panel.

Panel members present were: Roger H. Gilman, director of port development, Port of New York Authority; William Littlewood, vice president for research and development, American Airlines; Prof. Harmer E. Davis, director, Institute of Transportation & Traffic Engineering, University of California; E. B. Ogden, vice president, Consolidated Freightways; Louis W. Prentiss, executive vice president, American Road Builders Association.

Also present: Prof. John B. Wilbur, head of the Department of Civil and Sanitary Engineering, Massachusetts Institute of Technology; Lawrence Litch-





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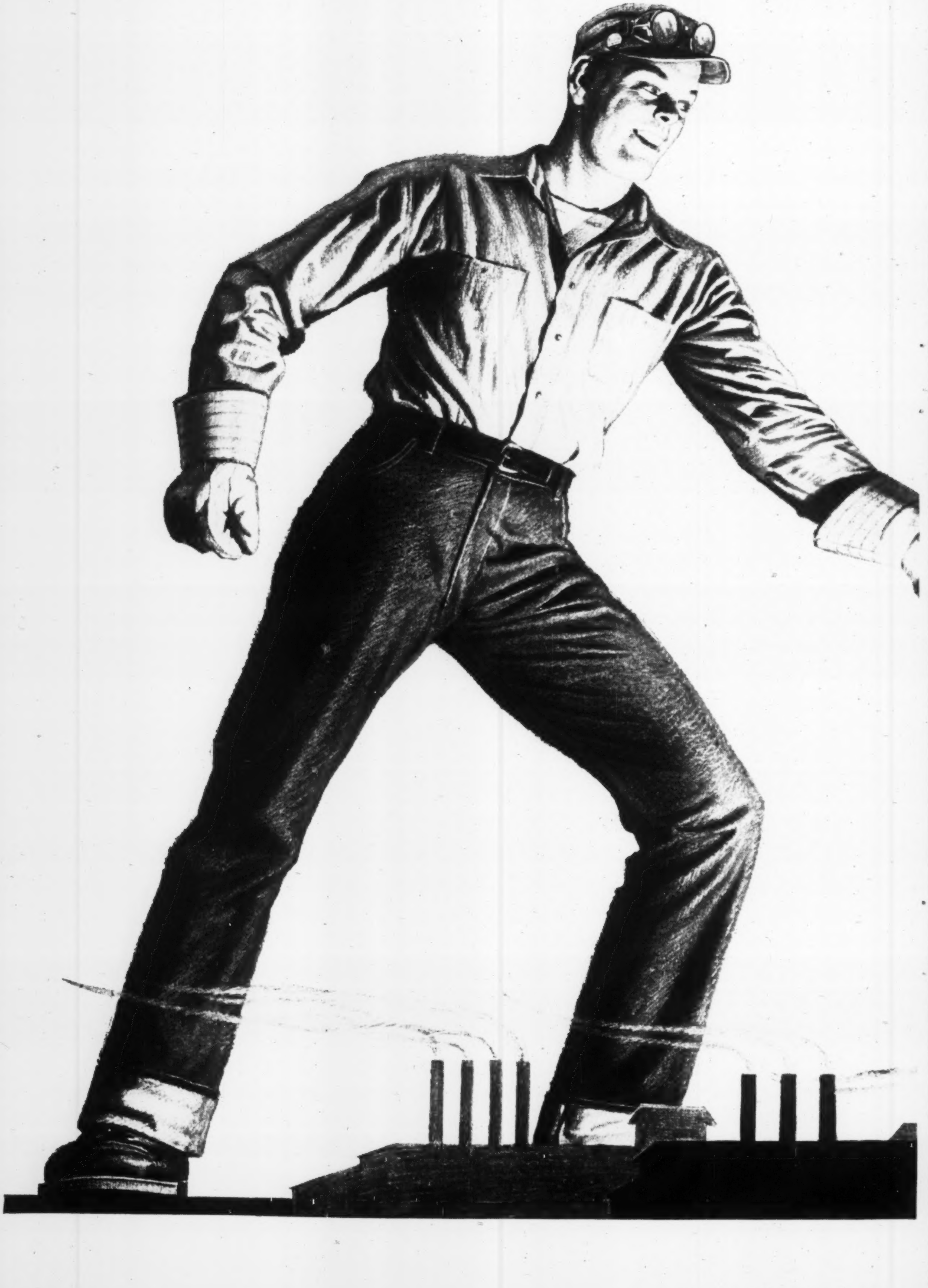

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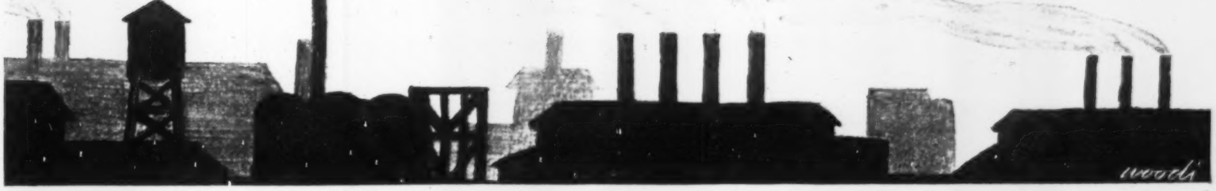
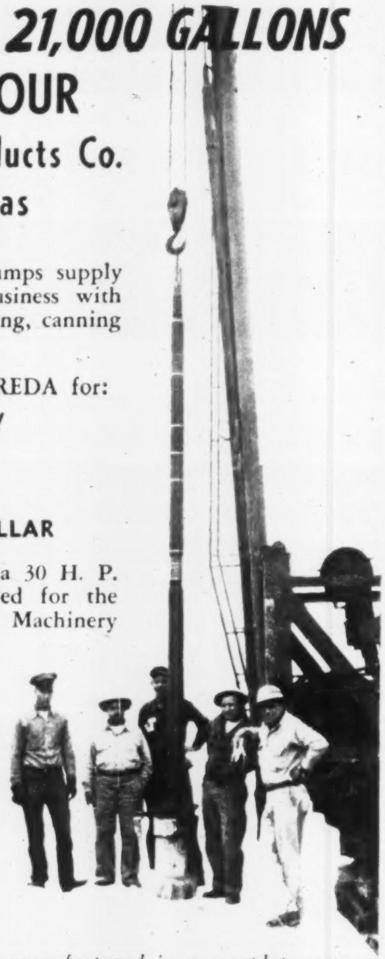


REDA SUPPLIES *21,000 GALLONS* OF WATER PER HOUR
for Kimbell Food Products Co.
Fort Worth, Texas



Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.

INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

Reda Submergible Pumps are manufactured in a complete range of sizes from ⅓ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

REDA PUMP COMPANY
BARTLESVILLE, OKLAHOMA
Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

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field, Jr., vice president, Aluminum Company of America; Roger D. Stanwood, vice president, Transcontinental Gas Pipe Line Corp.

Also Carol B. Jansen, president, Dravo Corp.; Hartley Rowe, vice president and chief engineer, United Fruit Co.; Richard E. Dougherty, consulting engineer; Hal H. Hale, highway counselor, Association of American Railroads; William J. Hedley, chief engineer, Wabash Railroad Co.; Douglas Turnbull, assistant to the president, Baltimore & Ohio Railroad.

Panel members not present: Edward H. Anson, vice president, Gibbs & Hill, Inc.; Rex M. Whitton, chief engineer, Missouri State Highway Commission; J. M. Trissal, vice president and chief engineer, Illinois Central Railroad; L. S. Finch, executive vice president and chief engineer, Indianapolis Water Co.

Careers

Lester A. Cook has been appointed manager of field operations for Bill A. Smith & Co., general contractor, Los Angeles.

Robert A. W. Carleton, president and founder of the Carleton Co., engineers and contractors in New York City, has been chosen as the 1959 recipient of the Egleston Medal, Columbia University's highest award for "distinguished engineering achievement." A graduate, in 1904, of the university's School of Engineering, he engineered much of New York City's subway system and the Pennsylvania Railroad and Long Island Railroad tunnels in the city.

Fred E. Ressegieu has been appointed manager of Defense Projects for Bechtel Corp., San Francisco engineers and constructors. He served for 20 years in the Army Corps of Engineers, retiring as a colonel. He joined Bechtel last year.

Valden F. Farnham, Harold A. Moores and **John H. Wirries, Jr.** have formed the firm of Farnham, Moores & Wirries in Toledo. The company will specialize in land-development planning, sewer systems and design of highways and airports.

Leo F. Flotron has resigned as chief of the Dayton, Ohio, Bureau of Highways to become a consulting engineer with E. Edward Ernst of New Orleans.

Charles E. Mason has been promoted to general construction superintendent of Indiana Bell Telephone Co., Indianapolis.

William J. Parisi, formerly an engineering consultant, has joined New England Industries, New York City, as chief construction engineer. The com-

Checklist for Dredge Selection

Successful dredging operations require efficient use of time and labor, avoidance of downtime, and all-around capability of a dredge backed up by a builder of recognized merit. Before you buy a dredge, be certain that the builder qualifies on all of the following points. You must be assured that he has complete responsibility for the performance of your equipment.

	ELLICOTT	BUILDER A	BUILDER B
Is the dredge a 100% unified machine, designed and built by a single engineering source?	✓		
Does the builder *integrate* all the parts into a *balanced* construction tool?	✓		
Can he assure the performance potential of the completed dredge?	✓		
Are his equipment recommendations based on your specific job requirements?	✓		
Is he willing to take *complete* responsibility for field performance?	✓		

Come to Ellicott first for real evaluation of the factors you must consider—in your own interest—to insure a sound investment in the dredge best suited to your needs.

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Successors to the floating dredge business of the Bucyrus-Erie Co. and the American Steel Dredge Co. Complete engineering sales and repair parts service.

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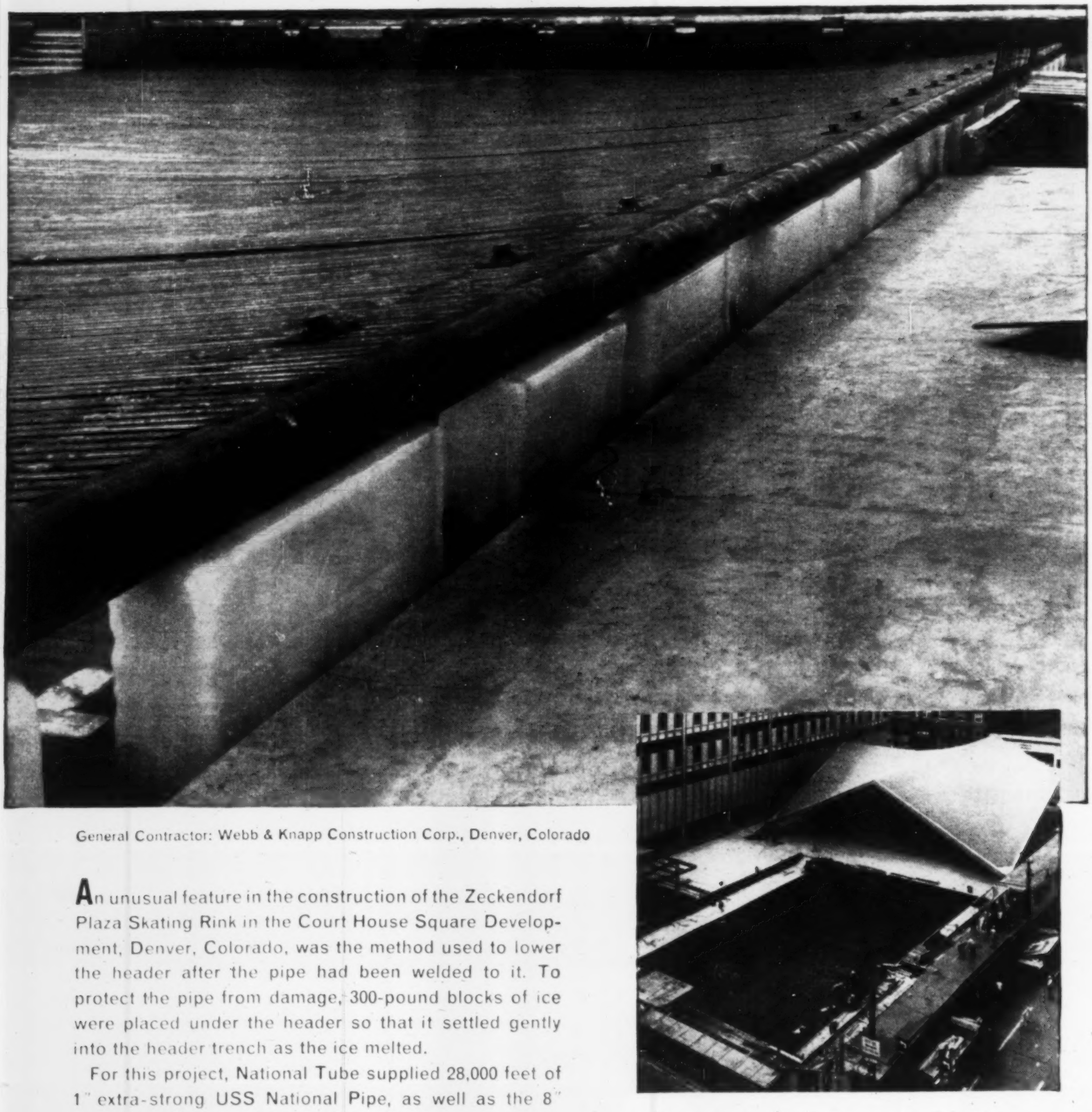
Cool cushions ease skating rink pipe into place!



General Contractor: Webb & Knapp Construction Corp., Denver, Colorado

An unusual feature in the construction of the Zeckendorf Plaza Skating Rink in the Court House Square Development, Denver, Colorado, was the method used to lower the header after the pipe had been welded to it. To protect the pipe from damage, 300-pound blocks of ice were placed under the header so that it settled gently into the header trench as the ice melted.

For this project, National Tube supplied 28,000 feet of 1" extra-strong USS National Pipe, as well as the 8" Seamless Pipe used for headers which were spaced 63' 10" apart. The rink covers 7,071 square feet—an area that required 442 runs.

If you need top-quality steel pipe for ice skating rinks, snow-melting and radiant-heating installations, or for all types of building and industrial applications, be sure you specify USS National Pipe. *Why?* Because National Pipe gives you the best possible investment by giving you the best possible service per dollar of cost. If you'd like further information or immediate assistance with your pipe problems, write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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"The world's largest and most experienced manufacturer of tubular products"

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National Tube
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York

Ned L. Threatt has been put in charge of a new editorial and public relations department for Wilbur Smith & Associates, consulting traffic engineers. He will be located at the firm's Columbia, S. C., office.

J. A. Mecia has been elected a general vice president of Utah Construction Co., San Francisco. He had been special vice president and manager of the company's mining division.

Public Works

Nelson Fuller, who has headed the Batavia, N. Y., water department for the past ten years, has resigned to become executive engineer with the Monroe County (N. Y.) Water Authority.

Edward L. Pine, former secretary-manager of the Nevada Chapter of Associated General Contractors, has been appointed state highway engineer of the Nevada Department of Highways. The department promoted **W. O. Wright** from division engineer to assistant state highway engineer.

Fred S. Poorman has been appointed deputy secretary and assistant chief engineer of the Pennsylvania Department of Highways. He had been deputy commissioner of the Public Building Service of General Services Administration.

Howard H. Harris, formerly assistant chief engineer of the Virginia State Highway Department, was appointed administrative assistant to the highway commissioner. **Charles Nelson,** previously personnel engineer, has been named director of the newly-created personnel and organization division.

Edgar H. Stickney has been promoted from district engineer to construction engineer of the Vermont State Highway Department. **Alexander Graham,** formerly a resident engineer, succeeded Mr. Stickney as district engineer.

William C. Bassette has succeeded Newton F. Ronan as superintendent of operation and maintenance in the New York State Public Works Department.

Associations

Verne O. McClurg, of McClurg, Shoemaker and McClurg, Architects and Engineers, Chicago, has been elected president of the Chicago Engineers Club. He is a civil engineering graduate of the University of Colorado, class of 1911.

H. Earl Fullilove has been elected vice chairman of the Board of Governors, Building Trades Employers Association, New York City. He was director of labor relations and personnel for the Fuller Co., New York City.

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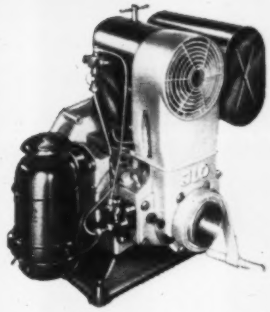
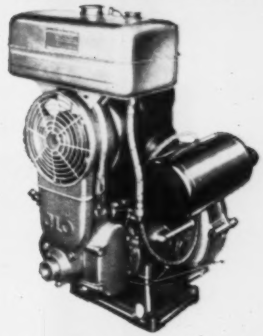


Jlo Series 365
7 Horsepower



Jlo Series 660
12 Horsepower

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(Pronounced "ee-lo")

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SIMPLICITY: 2-cycle design, practical in this horsepower range, eliminates valving for maintenance-free operation.

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7 TO 12 HORSEPOWER: high power rating in a small package to match your requirements for a light-weight power source.

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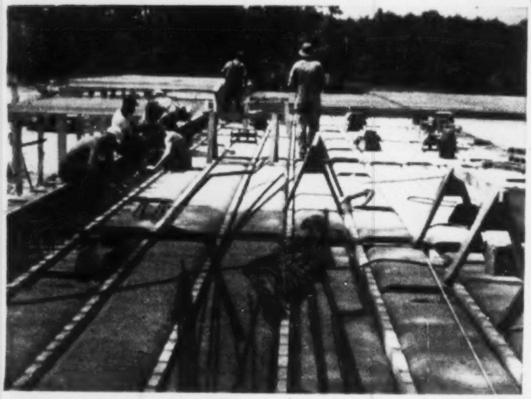
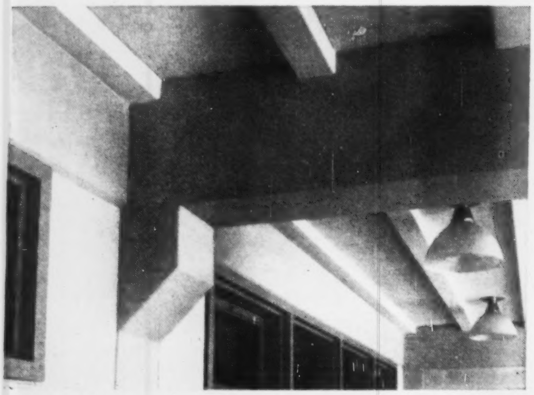
Lehigh Early Strength Cement

FOR MODERN FIRESAFE SCHOOL

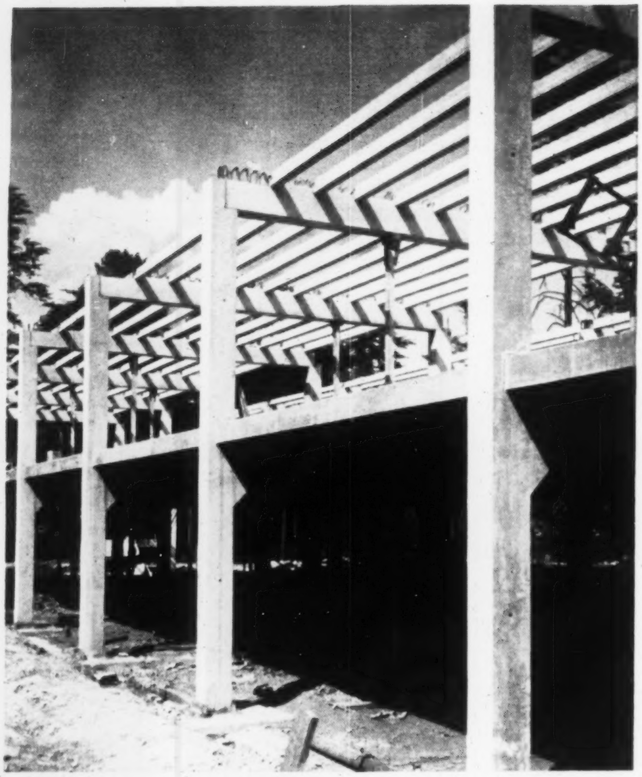
Walter Hines Page Senior High School, Greensboro, N. C.
Architect: McMinn, Norfleet & Wicker, Greensboro, N. C.
General Contractor: Brooks Lumber Co., Greensboro, N. C.
Contractor for Precast Units: Arnold Stone Co., Greensboro, N. C.



Concrete filler block laid between precast joists ready to receive concrete to complete floor.



Interior closeup shows neatness of exposed precast concrete structural system.



The 95,000 square feet of roof and floor area in this school is supported by 4,200 feet of columns and 4,500 feet of beams . . . all precast concrete.

● Low maintenance . . . fire safety . . . long life . . . neat appearance. These are advantages of precast structural concrete construction. And equally important, units are quickly cast to specification, ready for delivery when needed. Erection is quick and easy.

In precasting the various units for this school, Lehigh Early Strength Cement was used to achieve maximum production efficiency and economy.

"Structural members were cast one day and stripped from their forms the following day and moved to storage," writes Mr. M. A. Arnold of the Arnold Stone Company. "By using Lehigh Early Strength Cement, the precasting operation was completed in half the time required had we used regular portland cement."

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH PORTLAND CEMENT
- LEHIGH MORTAR CEMENT
- LEHIGH AIR-ENTRAINING CEMENT

LEHIGH PORTLAND CEMENT COMPANY
Allentown, Pa.

Obituaries

Henri Rush, 84, for 16 years chief engineer of St. Louis, Mo., and an architect. He was also a former engineer for the City Plan Commission. In private practice he designed several churches in the St. Louis area. He came to St. Louis after serving in South Africa during the Boer War. He designed the Airdrome and the Boer buildings at the 1904 World's Fair.

Donald S. MacBridge, 65, president of American Cement Corp., Philadelphia. He had been associated with the cement industry for the past 40 years. He started with the Lone Star Cement Corp. as district engineer and eventually moving up to vice president, Indiana and Pennsylvania divisions. He had previously been associated with Hercules Cement Corp. for 20 years as vice president for sales, executive vice president and president.

John P. Hagstrom, 65, president, J. P. Hagstrom Construction Co., St. Paul. His firm built several St. Paul city schools.

Harold C. Whittlesey, 62, structural engineer on many civic and public buildings in Southern Calif.

James J. Hart, 77, founder and former president of J. J. Hart Bank Fixture Co., Louisville. His firm specialized in remodeling banks and business houses.

Louis Adler, 75, New York City builder. A native of Austria, he came to this country as a boy. He started as a $3 a week clerk in a firm in the garment district, eventually opened his own dress manufacturing concern, and in 1923 turned his hand to construction and real estate. His first project was a 26-story structure for dress manufacturers. This was followed by many other successful skyscraper projects around the city. His most recent building was a 36 story structure at 100 Park Avenue.

William H. Crangle, 67, president of the Cleveland Builders Supply Co. He was president of the Metropolitan Concrete Company from 1928 to 1933. It was absorbed by Cleveland Builders Supply in 1933. Mr. Crangle became president and general manager in 1953.

Truman B. Smith, 67, a civil engineer and structural designer for the Nickel Plate Road, in Cleveland. A graduate of the Clarkson Institute of Technology, he was a former secretary of the Group of Professional Engineers of the Nickel Plate Road.

Edmund P. Burke, 71, manager of contracts for Buell & Co., Denver architects-engineers. He directed construction of the Ramo-Wooldridge Co. plant near Denver. During World War II he was chief engineer for the California Institute of Technology.

Joseph A. Roletter, 76, architect and former director of the Philadelphia Department of Architecture. He had been a city employee for 37 years.

Stanley D. Twitchell, 74, an engineer with the Arthur G. McKee Co., Cleveland engineering and construction firm. He specialized in building and plant design.

Gordon B. Canaga, 76, a highway bridge engineer with the Bureau of Public Roads from 1935 until his retirement in 1949. Before joining government service he spent 12 years as a civil engineer with the Pennsylvania Railroad. He graduated from Cornell University in 1907 and worked for the next 11 years in the Philippines for the Bureau of Public Works.

Charles R. Ross, 91, a prominent engineer and contractor, in Sacramento. He founded the Ross Construction Co., which operated in northern and southern California. One of his company's major projects was the Santa Anita Dam at Arcadia, Los Angeles County.

Capt. Charles R. Johnson, 67, district public works officer of the 11th Naval District, San Diego, from 1948 until his retirement in 1951, in La Jolla, Calif. A member of the Navy's Civil Engineering Corps, he commanded a 10,000-man organization that operated artificial harbors that were towed to the coast of France in the 1944 invasion of Normandy. He entered the Navy in 1918, five years after his graduation from Cornell University.

G. L. Walter, 80, formerly of the city engineering department in Coral Gables, Fla. In the late 1930's Mr. Walter worked as a civil engineer for the United Fruit Co. He spent several years in Honduras as a representative.

Biscoe A. Kibbey, retired associate hydraulic engineer for the California Department of Water Resources. After graduating from Harvard University, where he received an engineering degree, Mr. Kibbey worked as a civil engineer in Central America. He started working for the State of California in 1928 and retired in 1949.

John D. Manly, 63, builder of roads in Florida and other southeastern states, in Leesburg, Fla. He founded the Manly Construction Co.

Lacy L. Shirley, 67, retired bridge engineer of the Chesapeake & Ohio Railway Co., in Richmond, Va.

Otto S. Zelner, 81, associate professor emeritus of civil engineering at the University of Minnesota, in Central Valley, Calif. He joined the faculty in 1910 and retired 36 years later.

Malcolm J. Boyle, 61, founder and president of M. J. Boyle & Co., Chicago. His company handled a number of major expressway, subway and large sewer construction projects in the Chicago area.

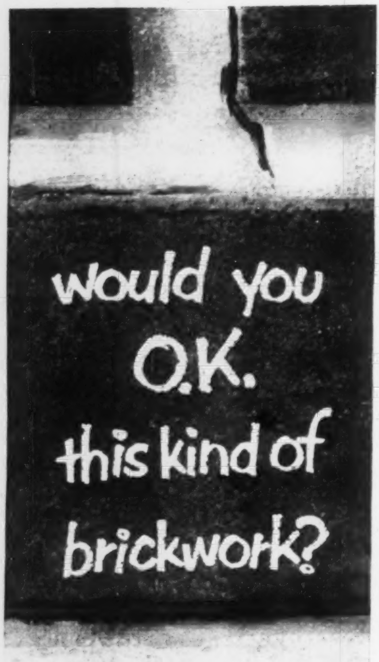
George W. Clark, past president of the Ohio Society of Professional Engineers and former Ohio University professor of civil engineering. Mr. Clark was a former partner in the firm of Clark and Sheeter, Athens, Ohio. He was a graduate of Wooster College and Case Institute of Technology. He served for a year as civil engineering instructor at the American University in Biarritz, France.

Joe A. Saylor, 69, municipal public works superintendent at Elkin, N. C. for the past 15 years.

Lawrence M. Saunders, 66, a senior civil engineer in the New York State Department of Public Works. Mr. Saunders was appointed to the department's Hamburg Division in 1930 and had been attached to the Albany office since 1948. He was a graduate of the University of Michigan.

William A. Rathmann, 80, a former commissioner of public works for the city of Buffalo, N. Y. In recent years Mr. Rathmann worked for Nussbaumer, Clarke and Velzey, Inc., Buffalo Civil Engineers.

James J. Versluis, 85, for 25 years engineer of waterworks construction in Chicago until his retirement in 1942. Born and educated in the Netherlands, his first job with Chicago was with the Board of Local Improvements. In 1911 he was made assistant engineer of water works construction, advancing to chief of the construction division in 1918. Many of Chicago's major water works projects, including Lake Michigan cribs, big tunnels and pumping stations, were built under his supervision.



Obviously not. The mortar's shrinkage has left cracks that permit water penetration, resulting in leaks and efflorescence.

To prevent conditions like these . . . use Horn's Hydratite® PLUS. It retains the mixing water in the mortar, reduces absorption by bricks. This allows the mortar to develop full strength, adhesion and bond to masonry. The results? You control shrinkage, prevent leaks and efflorescence.

To make concrete, stucco or cement plaster mixes water repellent . . . use Horn Hydratite in liquid or powder form.

Like to know more about the Hydratites? For condensed data see Sweets—for complete A.I.A. specifications, write Dept. ENR-HPL.

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Plastic Design Made Easy

PLASTIC DESIGN IN STEEL—94 pages. American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y. $4.

This book is intended to make it easy for engineers to use the new theory of plastic design for steel. It provides a brief explanation of the theory, the new AISC rules for plastic design, and numerous charts and tables to facilitate application of the theory.

The plastic theory makes it possible for designers to take advantage of the ductility of structural steel and thus specify more economical beams. In its present form, it applies only to continuous beams and one-story rigid frames subjected to static loading.

Two assumptions, based on an idealized stress-strain curve for structural steel, are made in plastic design:

- With increasing load, the entire cross section of a beam can become plastic without failure occurring. As more load is applied to the beam, this section rotates without resistance. In effect, it acts as a "plastic hinge."
- A continuous beam or rigid frame will not fail until sufficient plastic hinges form to convert it into a mechanism, deforming freely without increase in load.

These assumptions have been verified by tests at Lehigh University sponsored by the AISC and by investigations abroad, notably in Great Britain. Background material leading to the recommendations in the new design manual will be published in a future report, "Commentary on Plastic Design in Steel," by the AISC.

Basic principles of plastic design are summarized in the manual's opening chapter. The second chapter takes up two simplified methods of analysis—the equilibrium and mechanism methods. It introduces formulas and charts that speed the design of continuous beams and single and multispan rigid frames, including gable type. These enable beam sizes to be selected in much the same way as they are chosen for simple beams designed by elastic theory.

But since there is more to design than merely selecting beam size, the book in subsequent sections treats other important details—column design, connections, lateral bracing and unsymmetrical sections. It shows how to evaluate the effect of axial load on bending resistance and how to avoid web crippling.

Three chapters are devoted to design of continuous beams and frames. These offer complete design examples to illustrate the analysis methods and use of design charts and tables.

In an appendix the manual reproduces the Supplementary Rules for Plastic Design and Fabrication approved by the AISC.

Famed Reference Revised

CIVIL ENGINEERING HANDBOOK—Fourth Edition, by Leonard Church Urquhart. 1,174 pages. McGraw-Hill Publishing Co., New York, Toronto and London. $17.50.

This well-known handbook has been almost completely revised for the fourth edition. Material saved from the previous edition has been updated and a wealth of new information added.

It consists of ten sections, each covering a major subdivision of civil engineering. They were written by 13 authorities. As before, the objective of the book is to present in one volume the fundamentals of civil engineering in such manner that students and engineers will find it useful when confronted with problems outside their specialized field.

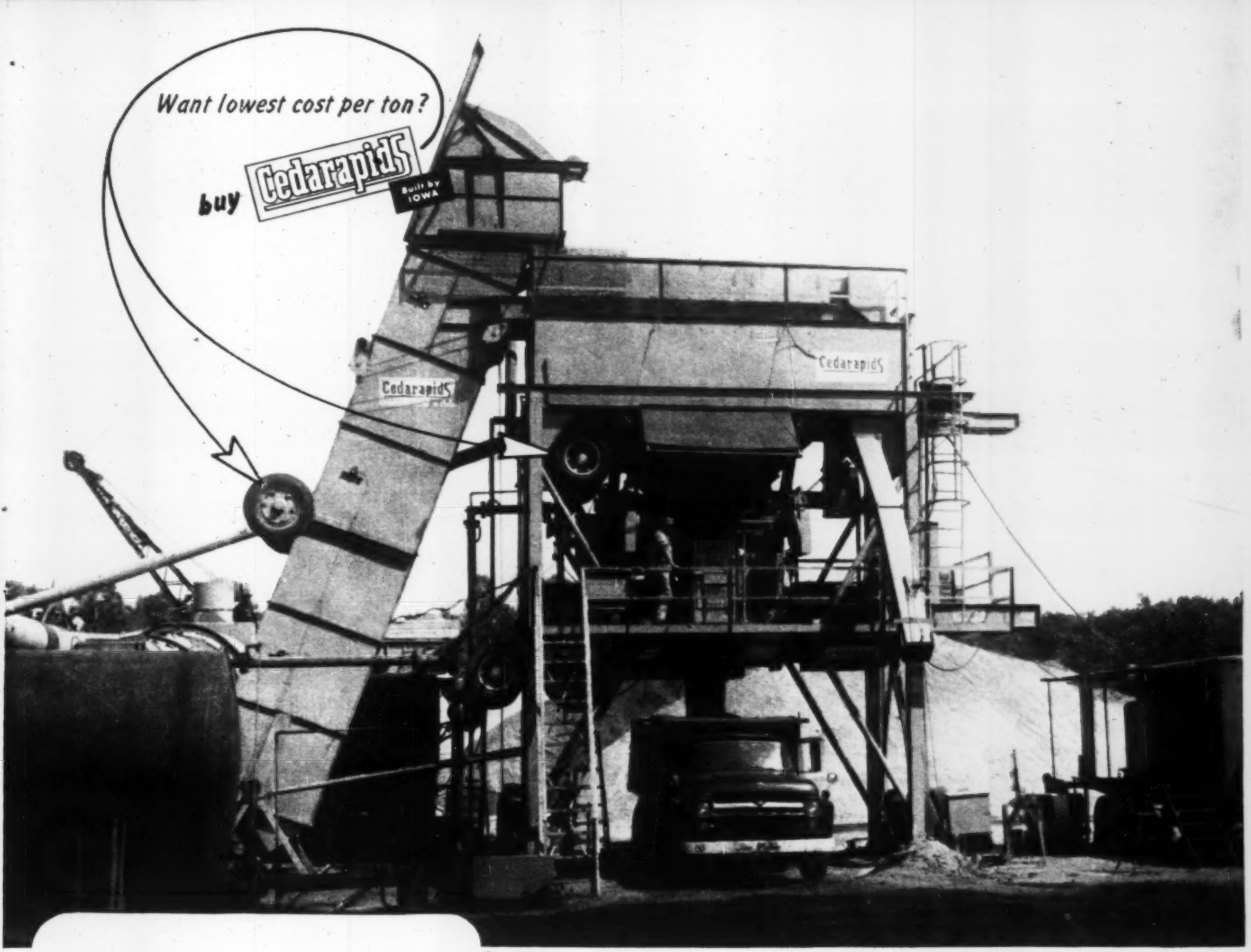
The section on surveying and photogrammetric surveying, in keeping with the present trend, is treated more extensively than previously. Also, material on aerial photogrammetric route surveys has been added to the section on railway, highway and airport engineering. The section on airports has been beefed up with new data on runway configurations, soils classifications, pavement design, terminals, heliports.

The text on stresses has been completely rewritten. More attention now is given to the various methods of stress analysis, particularly of continuous beams and frames. Structural engineers will be especially interested in the single-cycle method of moment distribution presented here. Also explained is a method for checking moment distribution that automatically gives the correct answer if the bending moments being checked are incorrect.

Additional information on welding has been incorporated in the section on steel construction. And more design aids have been added for reinforced concrete design.

These are only a few of the outstanding changes in this reference book.

(Books continued p. 124)



How one contractor dismantled G60 Plant, moved 100 miles, set up and started producing in 3½ days!

Schultz & Lindsay Construction Company, Fargo, North Dakota, have moved their Cedarapids G60 Batch-type plant 12 times in 3 years!

They can dismantle the plant and get it ready for transport in 12 hours. They can set up the mixing unit, drier, dust collector, cold-feed equipment, yard piping, steam generator and wiring in 3 days. Their record move required just 3½ days to tear down, transport 100 miles, set up, and start operating! They never have a crane on the job.

Such fast and frequent moves are made possible by Cedarapids portable design and the exclusive self-erecting mechanism, not only on Model G60 plants, but also on G50 and G40 Models.

100% Portable — Self-Erecting CEDARAPIDS BITUMINOUS MIXING PLANTS Reduce Profitless Between-Job Delays

Count what these portability benefits of Cedarapids batch-type Model G plants mean to you! Each sectionalized unit is carefully "packaged." Nothing, except the delicate scales, has to be removed or changed for transporting. In dismantling, each section is ready to roll the minute the built-in running gear hits the ground. At the new site, the *only* available truly self-erecting mechanism quickly raises each section into place. No crane is necessary. The "packaged" sections fit together perfectly. You're back in operation almost before you know it, turning out exact-specification material. There are no costly relocation delays to nibble away at your season's per-ton profit. Add in the many other Cedarapids Bituminous Mixing Plant benefits in the complete line of both portable and stationary batch-type plants or continuous-mix plants. Ask your Cedarapids Dealer to prove that no other make can match them for profitable production.

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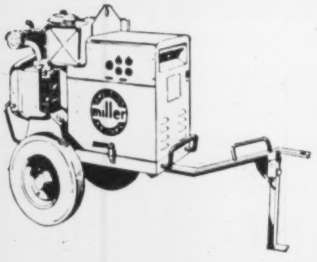
An original Miller design with performance standards, ruggedness and versatility that have made it a top hand from the Texas oil fields to New York dairy farms. Because, whether the AEA-200-L is hub deep in mud welding a derrick brace, or supplying power for lights and milking machines, or answering an emergency call aboard a repair ship. . . . IT DELIVERS. Currently a best seller in the highway construction market, the Miller AEA-200-L is handily the "finest in the field," and here's why:



- All-weather construction
- Onan 12.9 h.p. air-cooled engine coupled directly to generator
- Full 225 ampere output
- 100% DUTY CYCLE
- 5 KW, 110/220v ac
- 1 KW, 115v auxiliary dc
- Uses any ac or ac-dc 1/16" to 3/16" electrodes
- Seven station amperage selection with continuous current control

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Other Miller welder/power plants for metallic arc and TIG welding to 350 amperes.

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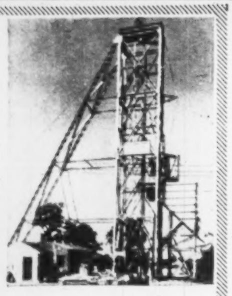

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Sources on 'Quakes'

Bibliography of Engineering Seismology—By Edward P. Hollis. 144 pages. Earthquake Engineering Research Institute, 465 California St., San Francisco 4, Calif. $4.50.

Bibliography of Effects of Soil Conditions On Earthquake Damage—By C. Martin Duke. 47 pages. Earthquake Engineering Research Institute, 465 California St., San Francisco 4, Calif. $1.00.

These two bibliographies provide valuable documentation for the civil engineer who wants to understand more clearly earthquakes and the damage resulting from them. The Hollis list is actually a second edition. But the first edition, circulated in 1954, had limited distribution and was aimed at developing a more complete list.

The Duke bibliography results in part from a recent half-year spent by Professor Duke in Japan where many earthquakes occur.

The work is part of a continuing program of the nonprofit Earthquake Engineering Research Institute that has sponsored two conferences on the subject in California (ENR July 10, 1952 p. 30 and ENR July 26, 1956 p. 32). Another conference is being planned in Japan in 1960.

Planning Parking Facilities

Parking—By Geoffrey Baker and Bruno Funaro. 202 pp. Reinhold Publishing Corp., New York, N. Y. $9.50.

Here is a thoughtful analysis of the parking problem in the U. S. and proposed solutions. The authors discuss location of parking areas, size of parking space required, what type of parking facilities are desirable under specific conditions and who is to pay.

The book is not just a generalized treatment of the subject. It provides a great deal of detailed data useful in design of parking facilities.

To simplify layout, for example, the book offers tables with stall dimensions, stall spacing and aisle width for various parking angles. Another table gives ramp length for various slopes of ramp and floor-to-floor heights. Still another presents minimum dimensions for helical ramps.

The book is profusely illustrated, both with drawings and photos. These show both the exterior design and interior layout of parking lots, ramp garages, parking decks, underground garages and elevator garages. The discussion should be very helpful to architects, engineers and others concerned with parking.

(*Books continued p. 126*)

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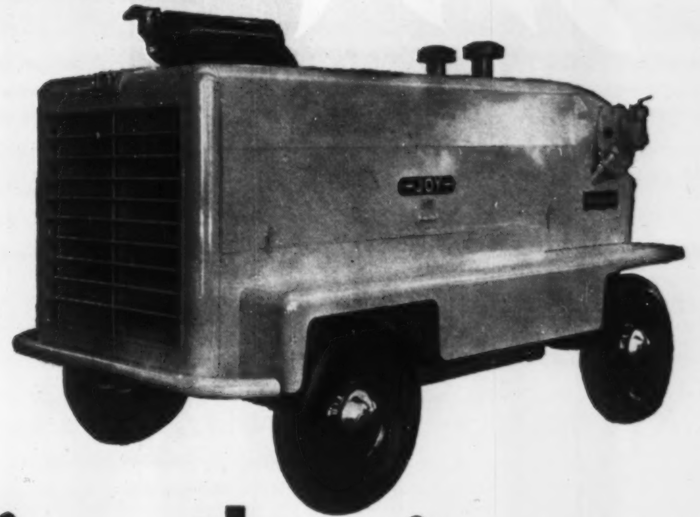

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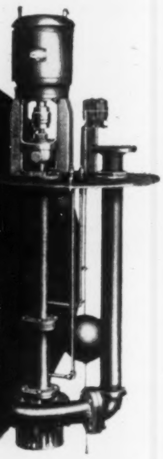

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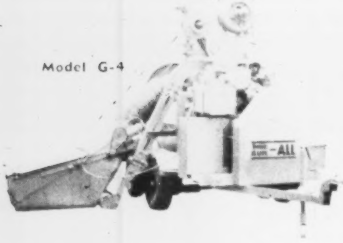

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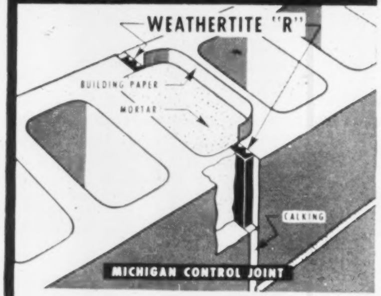

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Taming a River

The Building of TVA—By John H. Kyle. 162 pp., Louisiana State University Press, Baton Rouge 3, La. $7.50.

Twenty five years ago, in the midst of a catastrophic depression, a unique program was launched to tame a river and provide needed employment.

This book is an illustrated history of the success of the program since that time in the 41,000 sq mi Tennessee River Basin. The history of the design and construction of the Tennessee Valley Authority's "physical plant" is traced. Its dams, buildings, bridges and steam plants are pictured in "prize-winning" photographs.

When Norris Dam was started in 1933, the design of the 265 ft high gravity-type structure was considered so unusual that it eventually became a "showpiece." Starting with that project TVA's first—the author describes in turn the main river dams: Fort Loudoun, Watts Bar, Chickamauga, Hales Bar, Guntersville, Wheeler, Wilson, Pickwick Landing and Kentucky Dams. The storage dams discussed include among others, Apalachia, Hiwassee, Nottely, Fontana, Cherokee, Watauga and Wilbur. A chapter follows on nonpower projects, such as roads, bridges and office buildings.

One chapter is devoted to steam plants, from the 266,000 kw Watts Bar station to the 1.6 million kw Kingston station.

Continuous-Beam Analysis

Statically Indeterminate Structures—By Samuel Napp. 291 pages. Published by Rae Napp, 1749 Grand Concourse, New York 53, N. Y. $10.

This book presents a method of stress analysis developed by the author for continuous beams and frames. It should be of interest to students of indeterminate-beam theory.

The method appears to be a variation of the theorem of three moments. In general, it requires the solution of simultaneous equations. The author's chief contribution appears to be a technique for reducing the number of these.

In view of the general employment by most engineers of moment distribution for analyzing continuous beams and frames, usually eliminating the need for solution of simultaneous equations, the author's method probably will not be well received by engineers restricted to manual computation. However, engineers equipped with high-speed electronic computers, which can handle simultaneous equations with ease, might find it useful to compare the method with their present ones.

(*Books continued p. 130*)

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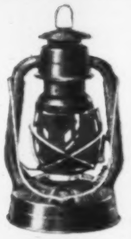
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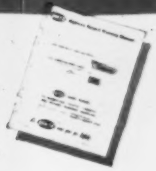

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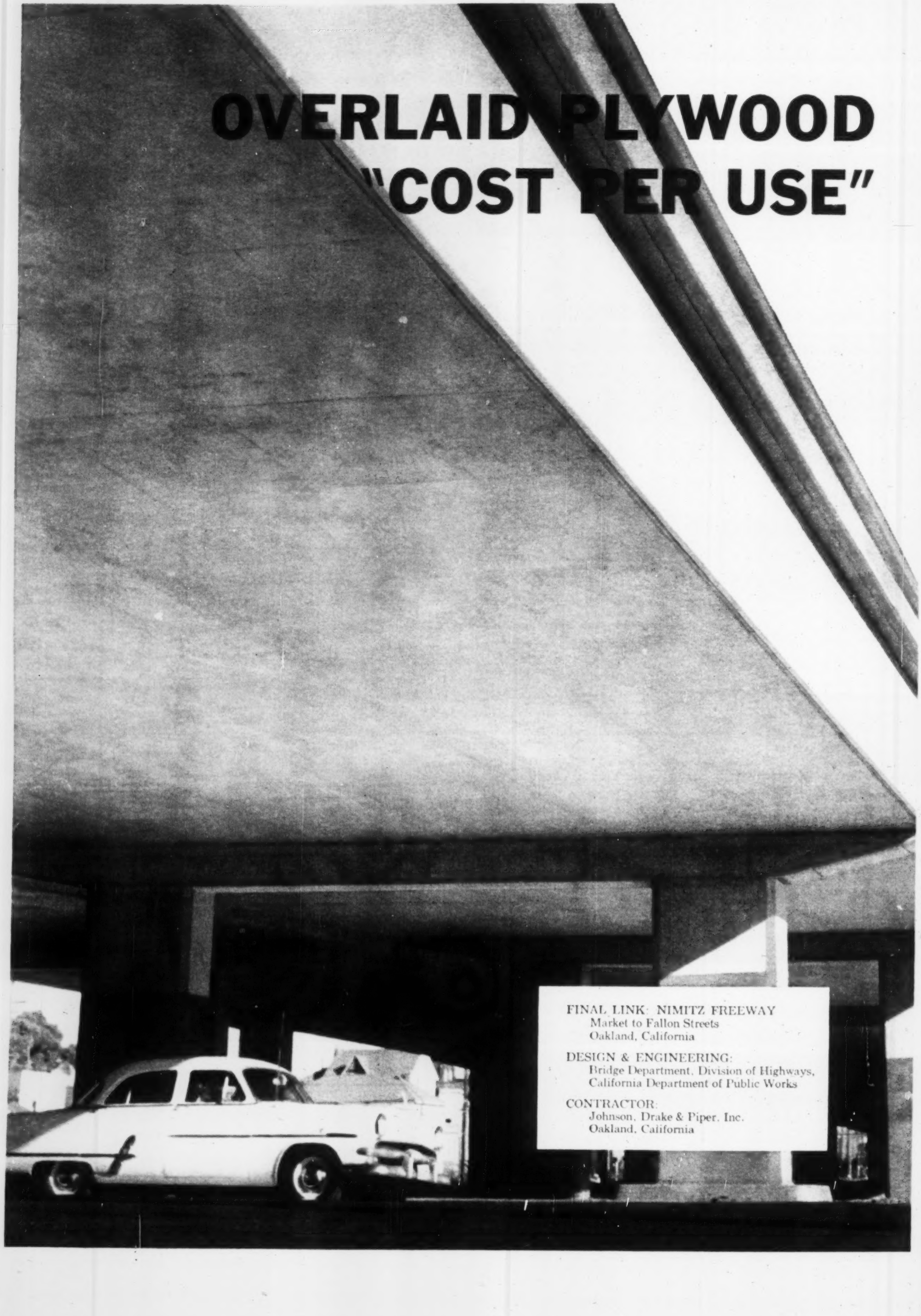

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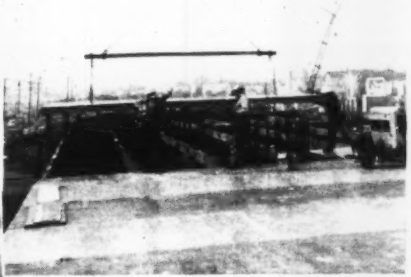
FORMS GIVE LOWEST ON ELEVATED HIGHWAY

In carefully planned sequence of operations, prefabricated shoring towers were positioned, screw-jacked to required height. Deck form sections were then crane lifted into position.



High density overlaid plywood concrete form panels give over 50 re-uses, cost less than .007¢ per sq. ft. of form per pour.

"THE EXTRA RE-USES we got from overlaid plywood more than offset its greater initial cost," says George Krenkel, project manager for Johnson, Drake & Piper, Inc., contractors for this 1.55-mile long 8-lane elevated highway.

"Even after giving upwards of 50 re-uses, a large percentage of the panels were salvaged for additional use on other jobs," Mr. Krenkel reports. "Besides being more economical in terms of cost per use, overlaid plywood creates much smoother concrete and is easier to strip and clean."

On the job over 50,000 sq. ft. of ⅝" overlaid plywood was used for deck slabs, columns and guard rails. Prebuilt 8' x 20' and 8' x 22' deck forms were supported by ingenious prefabricated shoring towers which were leap-frogged as pouring progressed. Screw jacks were used to raise towers to required heights. Stripping was accomplished simply by lowering jacks until the forms came free.

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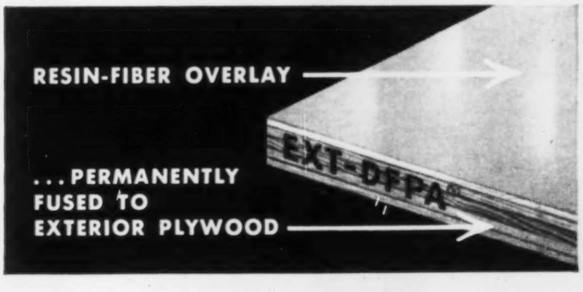

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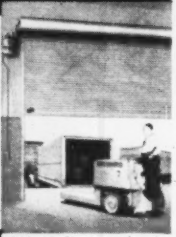

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Treatise on Concrete Joints

JOINTS AND CRACKS IN CONCRETE—By Peter E. Critchell. 232 pages. Contractor's Record Ltd., Lennox House, Norfolk St., Strand, London, W.C. 2. 40s.

This book is intended as a guide to the use of joints in concrete structures. Adoption of the principles and techniques presented in it should be helpful in preventing haphazard formation of cracks, which may be structurally dangerous and at best are unsightly.

The book surveys the various types of joints used, explains why they are employed and describes how they function. The need for joints, it points out, arises because concrete moves for a variety of reasons, including shrinkage, creep, temperature change and moisture variation. A chapter is devoted to estimating the amount of movement to be anticipated.

The author calls attention to the various factors that have to be considered in determining joint spacing. He suggests spacings for different types of structures.

Several chapters are devoted to jointing materials—fillers, sealing compounds and waterstops. Other chapters take up joint design and location, causes and prevention of defects, inspection, maintenance and testing methods.

Just Published . . .

WELDING TYPE 347 STAINLESS STEEL PIPING AND TUBING—by George E. Linnert. Bulletin No. 43. 103 pp. Welding Research Council, 29 West 39th St., New York 18, N. Y. $3.50.

CONSTRUCTION MANAGEMENT AND SUPERINTENDENCE—by Walter C. Voss. 238 pp. D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N. J. $6.95.

INTRODUCTION TO THE THEORETICAL AND EXPERIMENTAL ANALYSIS OF STRESS AND STRAIN—498 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $12.50.

GEOLOGY OF THE GREAT LAKES—by Jack L. Hough. 313 pp. University of Illinois Press, Urbana, Ill. $8.50.

THE PRACTICE OF SANITATION—by E. S. Hopkins and W. H. Schulze. 487 pp. Williams & Wilkins Co., Baltimore 2, Md. $8.00.

WATER RESOURCE DEVELOPMENT—by Otto Eckstein. 300 pp. Harvard University Press, Cambridge 38, Mass. $6.50.

NUCLEAR REACTORS FOR POWER GENERATION—144 pp. Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. $7.50.

ENGINEERING HYDROLOGY—by Stanley S. Butler. 356 pp. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. $7.00.

WATER RESOURCES AND THE LAW—614 pp. University of Michigan Law School, Ann Arbor, Mich. (Paperbound) $5.00.

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Schoolhouse: What to Do When Your Neighborhood Needs a School—271 pp. Simon & Schuster, Inc., 630 Fifth Ave., New York. $10.00.

1957 References on Fatigue—STP No. 9-1. 64 pp. American Society for Testing Materials—1916 Race St., Philadelphia 3, Pa. $3.00.

Marks' Mechanical Engineers' Handbook—Sixth Edition. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $23.50.

Careers and Opportunities in Engineering—by Philip Pollack. 140 pp. E. P. Dutton & Co., Inc., 300 Fourth Ave., New York 10, N. Y. $3.50.

Field Inspection of Building Construction—by Thomas H. McKaig. 337 pp. F. W. Dodge Corp., 119 West 40th St., New York 18, N. Y. $9.35.

Guide to the Literature of Mathematics and Physics—by Nathan Grier Parke III. 436 pp. Dover Publications, Inc., 920 Broadway, New York 10, N. Y. (Paper cover) $2.49.

Compilation of ASTM Standards on Mineral Aggregates and Concrete C9-D4—384 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., $4.75.

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Editorial Notes from Concrete & Construction Engineering—by H. L. Childe. 83 pp. Concrete Publications Ltd., 14 Dartmouth St., London S.W. 1, Eng. $1.75.

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Civil Engineering Handbook—Fourth Edition. McGraw Hill Book Co., 330 West 42nd St., New York 36, N. Y. $17.50.

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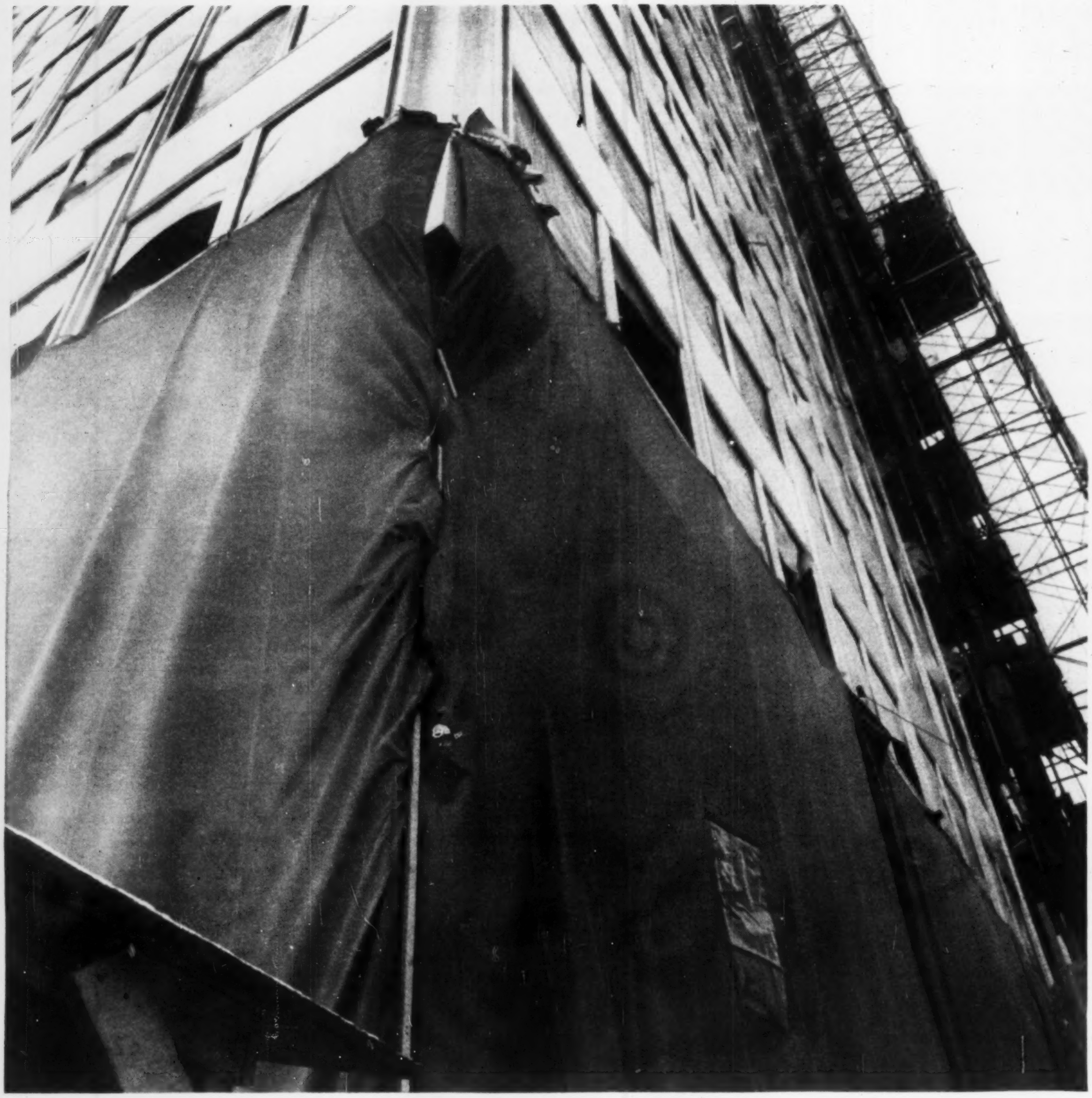

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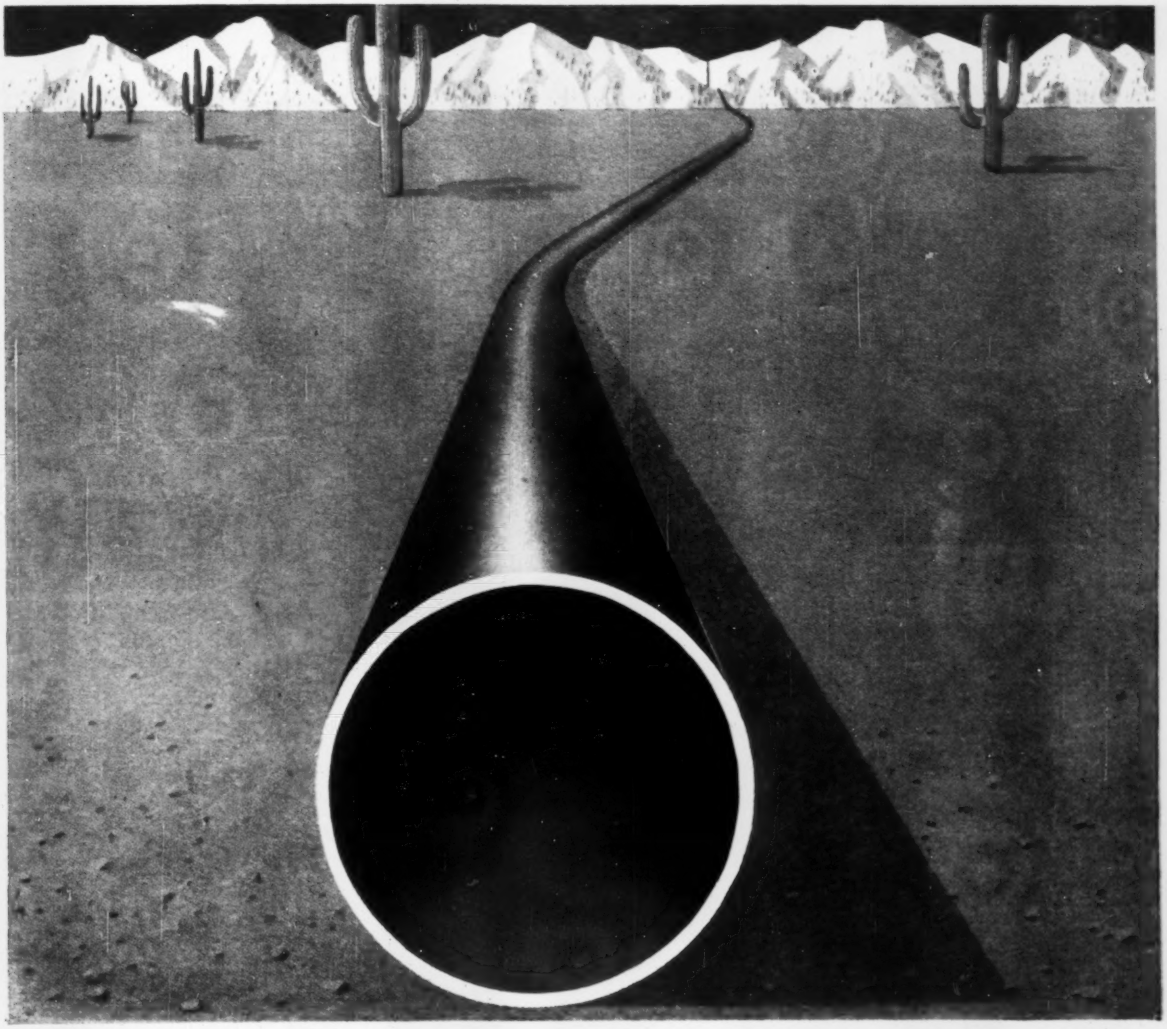
Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles



ALLIED CHEMICAL'S HOTLINE ENAMEL

defies 180°F. heat without sliding and –10°F. cold without cracking

Allied Chemical Hotline Enamel's resistance to both high and low temperatures, as well as its greater durability, compared to asphalt base and other coatings, has been proved by laboratory tests, and on-the-job performance for leading public utility companies. Allied Chemical Hotline Enamel is derived from coal-tar pitch, thus possessing inherent protective properties against the damaging effects of water, soil chemicals and electrical currents.

Improves protection under these specific conditions:

1. On pipe-type cables or "oil-o-static lines" which are subject to internal electrical heat from high-voltage surges.

2. Hot gas pipelines, on discharge side of compressor stations where line is above 120°F.

3. Warm, swampy areas or other places where excessive soil stress is encountered.

4. Areas where backfill and trenches are rough, rocky or contain objects which normally penetrate softer coatings.

5. Pipelines (such as heated fuel lines) where temperatures are constantly high most of the time, but do not exceed 180°F. or 200°F. for short term exposure.

A staff of field service experts are at your call to offer you technical assistance that can save you maintenance time and costs. **LAST WORD IN CORROSION PROTECTION.**

PLASTICS AND COAL CHEMICALS DIVISION
40 Rector Street, New York 6, N. Y.

Allied Chemical

EXCAVATING IS CHEAPER NOW *with the* JOHN DEERE CRAWLER-LOADER

MORE power makes the difference! This new John Deere Crawler-Loader not only puts out ten per cent more engine horsepower than previous units, but also has the huskier transmission and new working speeds required to give you full benefit of this increased working capacity.

Gasoline or Diesel

You can select your John Deere Crawler-Loader with either gasoline or Diesel engine. Each gives you the same increase in power over previous units, plus extras such as clutch-type direction reverser. Result: faster cycle times, lower loading costs, new heft and hustle to take on bigger jobs at greater profits. Write for complete information or see your John Deere Industrial dealer for a demonstration on your job!

SELF-LEVELING BUCKET LINKAGE!

Gets all that 7/8-yard heaped load into the truck! When bucket is dumped from full-height position, it returns to the ideal 9-degree digging angle by use of boom control only. Plenty of pry-out provided by 35-degree bucket rollback.

JOHN DEERE
JOHN DEERE
Industrial
Tractors and Equipment

JOHN DEERE INDUSTRIAL DIVISION • MOLINE, ILLINOIS

Unit Prices

Miami Expands Well Field Facilities

Two contracts to expand the Miami, Fla. well field facilities and provide a second supply line from its Southwest Well Field to the Alexander Orr treatment plant, will cost $473,774. The awards by the city's Dept. of Water and Sewers, went to:

	Amount	%
Blythe Brothers Co.		
Supply main from Southwest Well field	$296,189	62.5
Frank E. Keevan & Sons		
4 Well houses and pumping equipment	177,585	37.5

The well houses will be of concrete block and stucco construction, and the work includes furnishing and installing pumps, motors, piping, electrical equipment, and extending power lines, remote control system and well field road.

The pumps are deep well, vertical turbine, oil lubricated, rated 7 mgd at 80 ft T.D.H. and 880 rpm. The Dept. of Water and Sewers has estimated that the pumps will operate over a 20 year period under the following pumping conditions:

20% use at 80 ft T.D.H. (Design Head)
60% use at 60 ft T.D.H. Maximum Efficiency
20% use at 50 ft T.D.H.

The cost for pumping will be evaluated at each head using the following formula:

$$\text{Cost in Dollars (for 20 year period)} = 343.8\,\frac{QHP}{E}$$

Q = Quantity expressed in mgd (from mfg. pump curve)
H = Total dynamic head in ft (from mfg. pump curve)
P = % use (expressed as a decimal thus: 0.20 or 0.60)
E = Efficiency of the pump times the efficiency of the motor

The constant 343.8 is the cost of pumping at a rate of 1 mgd against a 1 ft head for 20 yr at $0.015 per kwhr

All concrete for the supply main project, except that used in the manufacture of concrete pipe, is Class D, with a design strength of 2,000 psi and a minimum content of 423 lb of cement per cu yd. Concrete pipe and fittings must have a design pressure of 50 psi. AWWA specifications C301-55T for reinforced concrete water pipe, steel cylinder type, prestressed, as modified and amended to date. Concrete pipe 48 in. and smaller must be lined cylinder type, and 54 in. and larger, embedded cylinder type.

The 72 in. casing pipe must be extra strength reinforced concrete culvert pipe, meeting ASTM specifications C 76-41, as modified and amended to date.

Concrete for the well houses is type B, with a design strength of 3,000 psi, and a minimum cement content of 564 lb per cu yd.

Prevailing wage rates for public construction in Dade County include carpenters $3.25; bulldozer operators 2.00; crane operators $2.90; pipe layers $1.58; common laborers $1.68.

Supply Main

1C	Blythe Brothers Co., Charlotte, N. C.	$296,189
2	Intercounty Constr. Corp., Ft. Lauderdale, Fla.	314,625
4	W. T. Price Dredging Corp., Miami, Fla.	347,470

Bids: 1 21 59 Items		Unit	Quantity	Unit Prices 1C	 2
Prestressed conc pipe & ftgs,					
54"	f&i	lf	2 382	$46.70	$49.00
60"	f&i	lf	2 246	53.90	54.50
Air release valves, complete,					
automatic, type I	f&i	ea	2	210.00	165.00
manual, type II	f&i	ea	3	190.00	140.00
Blowoff, complete	f&i	ea	3	900.00	550.00
conn at Snapper Creek Canal		ea	1	14,200	16,750
Cross conn, compl, incl vlv in main line, at well field		ea	1	20,200	25,700
at water treatment plt.		ea	1	17,500	22,800
Dredge Snapper Creek Canal	1,700 cy	ls	job	5,800	5,100
Conc casing pipe under RR near water treat plt, 72"	f&i	ea	1	2,500	2,750

Complete: 270 cal days. Liquidated damages: $30 day.

Well Houses and Pumping Equipment

1C	Frank Keevan & Son, Miami, Fla.	$177,585
2	Widdell Asso., Inc., Hollywood, Fla.	178,642
11	Southern Water Contractors, Inc., Tampa, Fla.	215,500

Bids: 1 21 59 Items	Unit	Quantity	Unit Prices 1C	 2
4 well houses & pumping equipment, complete	ls	job	$177,345	$178,322
Add for conc, if needed	cy	10	24.00	32.00

Complete: 250 cal days. Liquidated damages: $50 day.

Turnpike Authority Takes Alternate Guard Rail Bids

Bids were submitted on fully painted and alternate galvanized guard rail with painted face for this Pennsylvania Interchange in Burlington County, N. J. It's an extension of the New Jersey Turnpike.

The $95,096 award to W. V. Pangborn & Co., Inc., Philadelphia, by the turnpike authority, was on the galvanized rail. Howard Needles, Tammen & Bergendoff, New York City, is the consultant.

The contract includes lighting facilities and incidental work. The contractor will probably sublet all but the electrical work.

1C	W. V. Pangborn & Co., Inc., Phila., Pa.	$95 096
2	Maguire Engr. Co., Inc., Moorestown, N. J.	98 102
9	M-Zucker Co., Phila.	150 536

Bids: 12 18 58 Items		Unit	Quantity	Unit Prices 1C	 2
Trenching & backfill		lf	6 100	$0.50	$0.35
Undergr conduit, asb cmt, 3"		lf	1 270	0.90	1.05
metal, 3"		lf	4 830	3.12	2.27
Exposed conduit, metal, 3"		lf	650	5.28	4.21
Concrete junction box		ea	33	216.00	85.10
lighting standard base		ea	23	68.00	115.92
Series lighting conductor		lf	14 100	0.68	0.46
Lighting standard, twin arm		ea	23	382.00	510.60
Luminaire	instal	ea	46	132.00	171.37
Ground rod		ea	33	21.00	17.78
Underdeck lighting system		ls	job	1,822	1,752
Electric spare parts		ls	job	650.00	744.00
Surfacing, broken stone		sy	1 685	1.68	2.18
Maintain & protect traffic		ls	job	4,000	11,930
Final cleanup		ls	job	570.00	300.00
Guard rail	salv exist	ls	job	525.00	575.00
single, Alt A, fully ptd		lf	1 700	3.62	3.97
Alt B, galv, ptd face		lf	1 700	3.70	4.07
double, Alt A, fully ptd		lf	4 290	4.80	5.29
Alt B, galv, ptd face		lf	4 290	4.87	5.32

Complete: 6 15 59

Liquidated damages: $50 day

★ ★ ★ ★ ★

FIRST
STEEL MESH DECK
Still Making History!

The first installation of an open steel grid flooring on any bridge in the world was made in 1932, on the University Bridge, Seattle, Washington, by the Irving Subway Grating Co. The previous solid pavement on the bridge had been plagued by frequent repairs and accidents.

After 24 years this decking is still in service on the Seattle Bridge. It has had no major repairs and has never even been painted. Not a single accident has occured due to the bridge flooring.

Since then, 80% open Irving Decking has been used advantageously on hundreds of other bridges.

This remarkable record of service speaks for itself.

★

Write for complete information on Irving Bridge Decking.

ECONOMICAL
SAFE
DURABLE

"A Fitting Grating for Every Purpose"

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IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
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Materials and Labor Prices

Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 19: Next, Apr. 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 26: Apr. 30
- Wage Rates, Building Board Lath, Insulation: Last, Apr. 2: Next, Apr. 30
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Apr. 9: Next, May 7

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	......	$110.50	$130.00	$6.975	$9.75	$6.60	......
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	......
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	......	......	5.675	12.25	6.50	......	......	......	......	......	14.75
Youngstown Area	......	......	5.675	......	......	......	......	......	9.75	......	......
Geneva	5.50	5.30	......	......	......	......	......	......	......	......	......
Los Angeles	6.20	......	6.375	......	6.50	......	......	......	9.75	6.75	......
Pueblo	......	......	......	......	......	......	......	69.75	9.75	6.60	......

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATHk Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	EXPANDED METAL LATHk Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40	Quantity extras, per cwt: under 100#, +$10; 100–399#, +$7; 400–999#, +4.00; 1000–1999#, +1.25; 2000–4999#, base price; 5000–9999#, –25¢; 10,000–19,999#, –50¢; 20,000–29,999#, –75¢; 30,000# and up, –1.25	8.75	$8.75	EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000–1999#, +$1.50; 2000–4999#, +$1.20; 5000–9999#, +90¢; 10,000–19,999#, +60¢; 20,000–29,999#, +30¢; 30,000–39,999#, +10¢; 40,000# & up, none. ♦Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #6, #7, #8, #9, #10, #11 +50¢. ♦Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–499 tons, +50¢ but not over $4500; 75–199 tons, +65¢ but not over $2000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.	$53.00	$57.00	4 × 18 in., No. 5 & 10 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ....$7.04 4 × 12 in., No. 8 & 12 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ....$2.62 6 × 8 in., No. 6 & 6 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. $4.17
Baltimore	9.675		8.70T	....		42.00	46.50	
Birmingham	9.00ty		8.99ty	8.99ty		59.00pK	76.00pK	
Boston	10.01K		8.75t	8.75t		49.50K	54.00K	
Chicago	9.15s		7.16gu	7.16gu		52.00‡U	63.00‡U	
Cincinnati	9.56akt		9.04t‡	....		44.50Kg	49.00mnKg	
Cleveland	9.39at		7.14ct	....		46.50KL	51.00KL	
Dallas	10.40M		9.00	9.00		44.00w	48.50w	
Denver	10.16cK		9.25c	....		57.00n	63.00n	
Detroit	9.56		7.15g	....		55.00O	63.00O	
Kansas City	9.82sT		8.10N	....		49.00	60.00	
Los Angeles	8.90dkt		7.35fr	....		57.00r	63.00r	
Minneapolis			9.26T	9.26T		44.50K	49.00K	
Montreal	7.90–8.60iCF/8.20–8.90AiF		7.00/7.50FGi	7.00/7.50FGi		65.70h	70.20h	
New Orleans	....		8.00gktz	....		48.50K	53.50K	
New York	9.84‡s		8.60ty	8.60y		52.00n	59.00no	
Philadelphia	8.85/9.65‡tM		8.93/9.83‡t	....		46/48‡	48/52‡	
Pittsburgh	9.00y		7.35y	....		48.00‡rw	52.00‡rw	
St. Louis	9.48atz		7.75‡tzQ	7.75‡tzQ		61.00wzK	62.00wzK	
San Francisco	9.95aS		9.90jS	....		52.00S	56.00S	
Seattle	10.20aD		8.85DM			67.00‡nD	73.50‡nD	
Toronto	9.20H		7.85	7.85		46.00gqI	49.00gqJ	

■•‡ Delivered. •* Aver. of Canadian & American. •a 2000–9999# •b 10,000–15,999#, fob city •c 20 tons or over •d 10,000–29,999# •e Intermediate struct'l •f Incl. delivery in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add provincial and municipal sales taxes •i intermediate and hard grade •k fob city •l delivered: contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p 500 sq. yd. or more. •q 2.5 lb •r less 2% disc. for cash •s 2,000–4,999# •t less ½% disc. 10 days •u add 7.5¢ switch •v incl 15¢ del. •w truck lots. •x add 2% sales tax •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bldgs. •G add 10¢ del. •H 8.85 without tariff charges. •I 3 lb $60.00. •J 3 lb $66.00. •K less 2% disc. 10 days •L F.o.b. Youngstown plant •M 5,000–9,999# •N 2,000–19,999# •O 100 sy lots •Q 5 tons •R: revised •S less 2% disc. 10th •T less ½% dics, 10th of mo. •U less 2% dics 10 days

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C.I. PIPE PRICE INDEXa	ASBESTOS CEMENT PIPE Z per lin. ft. 6" Press Cl. 150	ASBESTOS CEMENT PIPE Z 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTM C13-54 8 in.	CLAY SEWER PIPE ASTM C13-54 12 in.	CLAY SEWER PIPE ASTM C200-55T 24 in.	CLAY SEWER PIPE ASTM C200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 6 in.	CLAY DRAIN TILE† 8 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE§ 24 in.
Atlanta	130.5	$1.61/1.69	$2.36/2.48	$0.55	$1.00	$4.50	$12.50	$209.00s	$334.00	$0.92mK	$3.68mK
Baltimore	140.1	1.61/1.69	2.19/2.30	.665	1.20	5.08	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61/1.69	2.26/2.37	.50r	.93r	4.60rw	11.04rw	296.00rz	433.00rz	1.25rS	2.75rS
Boston	143.1	1.63/1.71	2.19/2.30	.784qrtL	1.512qrtL	6.255qrtM		215.40r	330.60r	1.56S	3.47S
Chicago	140.9	1.61/1.69	2.19/2.30	.93rm	1.78rm	7.52rm	21.16rm	220.00Br	330.00Br	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	.665rt	1.2825rt	4.905rt	12.505r	240.00r	370.00r	.85rAB	3.25rAB
Cleveland	141.7	1.63/1.71	2.19/2.30	.798BCN	1.485tBC	4.77tBC	12.505tBC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63/1.71	2.26/2.37	.550‡B	.955‡B	4.40b‡B	9.75‡bB			1.25BD	2.85BD
Denver	148.2	1.71/1.80	2.36/2.48	.52nr	.96nr	3.93nr		460.00nr	580.00nr	1.05m	3.50m
Detroit	142.1	1.61/1.71	2.19/2.30	.90nk	1.70nk	6.80nk	18.50nk	182.00mk	280.50mk	1.10k	4.05k
Kansas City	138.5	1.61/1.71	2.26/2.37	.61r	1.105r	6.104br	16.50r	303.00r	581.00r	.95r	3.25r
Los Angeles	148.6	1.70/1.79	2.19/2.30	.82bl	1.78blS	7.19lR	16.96blST	410.00lS	590.00lS	1.24rE	3.66frE
Minneapolis	149.9	1.67/1.75	2.26/2.37	.93oB	1.67oB	7.36oB				2.19DFH	6.31DFH
Montreal				1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17D	3.11jpD
New Orleans	133.3	1.61/1.69	2.26/2.37	.528r	0.983r	5.43r		210.50pr	468.00	1.41il	3.70il
New York	138.5	1.63/1.71	2.19/2.30	1.02	1.94	7.58	19.48			1.50‡B	3.60‡B
Philadelphia	137.8	1.61/1.69	2.19/2.30	.68‡	1.31‡	5.13‡r	14.25‡r	300.00‡	350.00‡	1.75‡h	4.20‡h
Pittsburgh	142.9	1.63/1.71	2.19/2.30	.602	1.16	8.14	22.71	190.00	295.00	1.66Db	3.93DB
St. Louis O	136.9	1.61/1.69	2.26/2.37	.62r	1.15r	4.92r	12.68rS	200.00r	400.00r	1.50t	3.65
San Francisco	148.6	1.70/1.79	2.19/2.30	.86‡d	1.86‡d	7.53‡d	18.00‡d	360.00‡l	620.00‡l	1.05‡Q	3.30‡Q
Seattle	149.0	1.71/1.80	2.19/2.30	.85bk	1.83kb	7.61k		250.00‡ck		1.95ky	4.55ky
Toronto		......	......	.80F	1.50F	6.00F		157.00F	280.00F	1.05F	3.48F

•WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

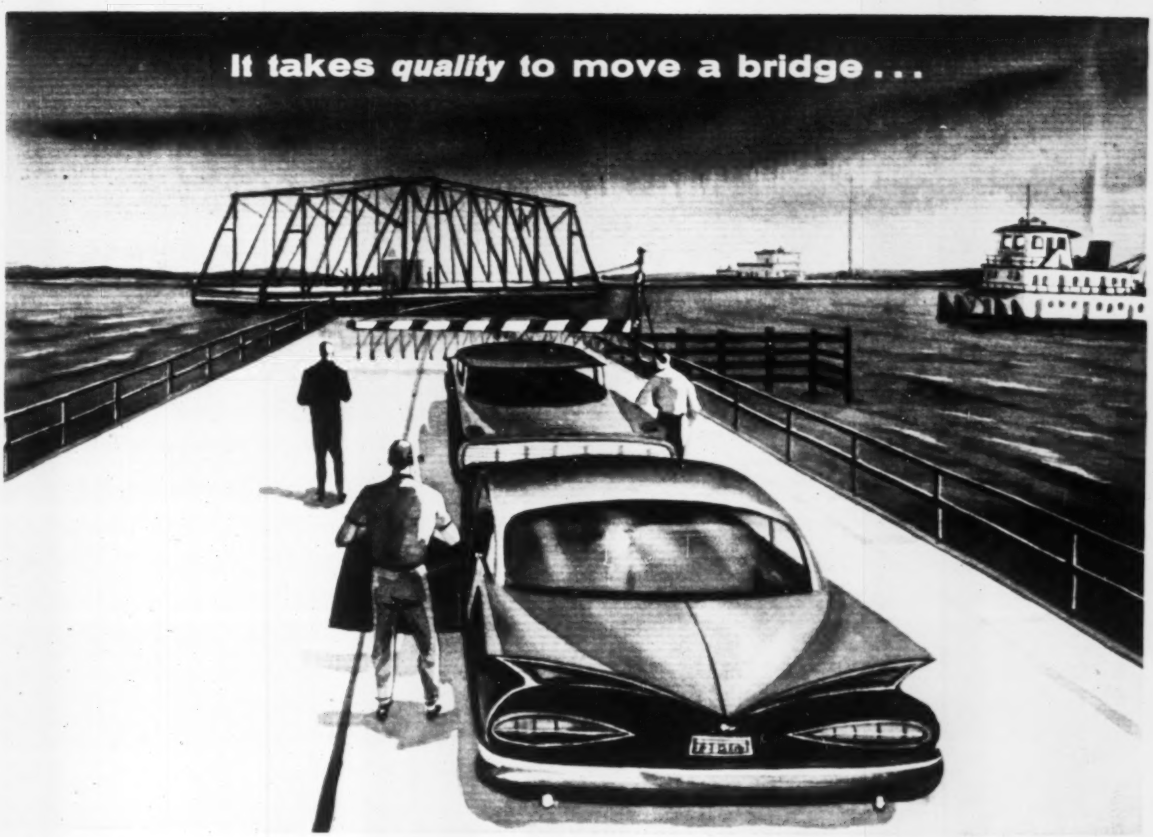
Mill	2½ & 3 in., Butt Weld• Black %	2½ & 3 in., Butt Weld• Galv. %	3½ to 6 in., Lap Weld• Black %	3½ to 6 in., Lap Weld• Galv. %
Lorain, Ohio	13.75	+2.50	+2.00f	+18.75f
Aliquippa, Pa	13.75	+3.50	3.25a	+11.00a
Sparrows Pt., Md	17.25	+1.00	....	....
Benwood, W. Va	13.75	+2.50		
Youngstown, O	13.75	+2.50	3.25	+13.50a
Indiana Harbor, Ind	12.75	+3.50	2.25ab	+14.50a
Sharon, Pa	13.75	+2.50	3.25ab	+13.50ab
Wheatland, Pa	13.75	+2.50	3.25a	+13.50a
Etna, Pa	13.75	+2.50	50de	
Fontana, Calif	0.75	+15.50b	+9.75ab	+26.50ab

• Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in. e Seamless f 5 in.

•† Extra quality •§ Extra strength •‡ delivered. •a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. •b Extra strength. •c 4-in., $130. •d SS361-A •f 21 in. •g culvert pipe; reinf., ASTM C 75-56 •h reinf., ASTM C 75-54 •i reinf., ASTM C 76-55 •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CESA A 60 1641. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforces. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76 57. •E less 1% disc. 10 days. •F less 5% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13 57. •M ASTM 200 57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •S ASTMC 72, 12" 1.55, 24" 4.00. •T extra strength.

• WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. ("based on approx. $200 per net ton): Butt Weld ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices. Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 65.54, galv., + 95.77; 1¼ in. black, + 65.54, galv. + 95.23, 1½ in. black, + 61.79 galv. + 91.22; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **R. I., Newport**—PERMANENT BARRACKS—BA 4/22—Dist. Pub. Wks. Office, 1st Naval Dist., Bldg. 37, 495 Summer St., Boston, Mass., permanent barracks for enlisted men, U. S. Naval Station, NBy 19253, Spec. 19253/58 Rev. $500,000-$1,000,000. Plans deposit $100. Bids Mar. 10 rejected, LB $849,942. CD 3/17, under LB.

▲† **N. H., New Boston**—TRACKING and DATA ACQUISITION STATION—BA 4/28—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., tracking and data acquisition station, Air Force Bombing Range. $2,500,000-$3,000,000. Plans deposit $25. Anderson, Nichols & Co., 10 Eastman St., Concord, engrs. CD 3/30.

BUILDINGS—BA

▲† **Me., Brunswick**—HOUSING—BA 4/21—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., 277 units Capehart Housing, Naval Air Station, NBy (CH) 22978, Spec. No. 22978/58. $4,293,580. Extended date. Wadsworth & Boston and Wright & Pierce, 27 Exchange St., Portland, archts. CD 2/27.

▲ **Conn., Portland**—SCHOOL—BA 4/22—Town, School Bldg. Comn., Town Hall, 64,000 sq. ft. high school, High St. $1,000,000. Plans deposit $50. Malmfeldt Assocs., 36 Pearl St., Hartford, archts. Henri B. Van Zelm & Assocs., 1007 Farmington Ave., West Hartford, engrs. CD 1/12.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Dpt. Hys., State House, Montpelier, Bids opened 4/3.

Lane Constr. Corp., 965 E. Main St., Meriden, Conn., LB $2,329,303, est. $2,350,000, sub-base, c. conc. 2.627 mi. Int. Hy. 89, Contr. 1, Proj. 1089-2 (5), Middlesex-Waterbury. CD 3/18.

Morganti, Inc., Danbury Rd., Ridgefield, Conn. LB $459,999, est. $500,000, sewage disposal plant, Wiley St., BARRE, VT. City, City Hall, Barre, Vt. Bids Mar. 31. CD 3/11.

▲ **Baylor Constr. Corp.**, 210 E. 40 St., New York, N. Y., CA $1,226,460, Contr. 2, sewage treatment plant and pumping station, WALLINGFORD, CONN. Town, Sewer Auth., Town Hall, Wallingford, Conn. Bids Dec. 15, awarded Apr. 2. CD 1/26, under LB.

BUILDINGS—LB & CA

Consolidated Constructors, Inc., 807 Congress St., Portland, Me., CA $538,675, NURSING HOME and HOME for AGED, MADAWASKA, ME. St. John's Valley Security Home, c/o Bunker & Savage, archts., 86 Court St., Augusta, Me. Bids Mar. 19. CD 3/25, under LB.

Fred I. Merrill, Inc., 187 Sawyer St., South Portland, Me., LB $533,000, est. $500,000 (1 bidder) SENIOR HIGH SCHOOL, SOUTH PORTLAND, ME. ... 25 Cottage Rd., South Portland, Me. Bids Mar. 31. CD 3/25.

Owner, c/o Pennell & Thompson, 830 Mass. Ave., Arlington, Mass., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, 22 houses, "Juniper Ridge" off Page Rd., BEDFORD, MASS.

▲ **John A. Volpe Constr. Co.**, 54 Eastern Ave., Malden, Mass., LB $1,658,500, est. $1,600,000, LIBRARY and SCHOOL of PUBLICATION, Fenway Ave. and Louis Pasteur Ave., BOSTON, MASS. Simmons College, The Fenway, Boston, Mass. Bids Apr. 2. CD 3/17.

Anderson Constr. Co., Inc., 68 Park Ave., Braintree, Mass., CA $410,000, RESIDENTIAL DEVELOPMENT, 23 houses, Wildwood Ave., Braintree Highlands, BRAINTREE, MASS. Owner, c/o contractor.

Owner, c/o Thompson W. Crosby, Neponset St., Canton, Mass., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, 24 houses, near Norwood Line and Norwood Airport, CANTON, MASS.

Owner, c/o Hingham Realty Assocs., 189 Lincoln St., Hingham, Mass., Separate Contracts, $415,000, RESIDENTIAL DEVELOPMENT, 17 houses, "Bradley Park" off Baxter St., HINGHAM, MASS.

Vincent R. Caputo, 78 Grove St., Winchester, Mass., CA $400,000, CONVENT, LOWELL, MASS. Ste. Jeanne D'Arc R. C. Parish, 137 White St., Lowell, Mass. Bids Mar. 13. CD 2/26.

Patrick F. Beresford, 269 Spring St., Medford, Mass., CA $500,000, PAROCHIAL SCHOOL, Adams St., NEWTON, MASS. Our Lady Help of Christians, 279 Adams St., Newton, Mass. CD 2/12.

▲ **Columbia Constr. Co.**, 11 Hanover St., Malden, Mass., CA $1,417,500, HOSPITAL addn., alterations, Locust St., NORTHAMPTON, MASS. Cooley-Dickinson Hospital, 30 Locust St., Northampton, Mass. Bids Feb. 27. CD 3/3, under LB.

▲ **Daniel O'Connell's Sons, Inc.**, 480 Hampden St., Holyoke, Mass., CA $2,116,366, est. $2,000,000, Proj. Mass. 78, Job No. 1, HOSPITAL addn., PITTSFIELD, MASS. Pittsfield General Hospital, Bd. Trustees & Bldg. Comn., 741 North St., Pittsfield, Mass. Bids Mar. 10. CD 3/13, under LB.

Poorvu Constr. Co., Inc., 192 Worcester St., Wellesley, Mass., LB $406,000, CONAD FACILITIES, Fort Heath and Fort Banks, ENG-19-016-59-96, Item 2, WINTHROP, MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Apr. 2. CD 3/19.

East Hampton Corp., c/o George Achen Bach, Congdon St., R.F.D. 2, Middletown, Conn., Owner Builds, $527,670, 33 HOUSES, "Collingwood Park", Forrest St., EAST HAMPTON, CONN.

▲ **Seymour H. Sard**, 21 Proctor Dr., West Hartford, Conn., Owner Builds, $3,100,000, 200 HOUSES, "Farmington Estates," Farmington Cut-Off, FARMINGTON, CONN.

Barker's Inc., Post Rd., Orange, Conn., Owner Builds, $400,000, seven 1 story, 40,000 sq. ft. cinder block, brick STORES, S. Solony Rd., WALLINGFORD, CONN. CD 4/1.

Casey Constr. Co., 3000 Whitney Ave., Hamden, Conn., Owner Builds, $690,000, 69 HOUSES, Bull Hill Lane, WEST HAVEN, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **Pennsylvania**—BA 5/5—U. S. Eng., 2635 Abbottsford Rd., Phila., dredging Delaware River, Allegheny Ave. to Benjamin Franklin Bridge. $2,000,000. CD 9/19.

BUILDINGS—BA

▲ **N. J., Newark**—SCHOOL—BA 4/21—City, City Hall, Broad St., McKinley School alterations, 130 7th Ave., $1,000,000. Lehman & Lehman, 972 Broad St., archts.

Pa., Elizabethtown—DORMITORY—BA 4/23—Elizabethtown College, Elizabethtown, men's dormitory, $800,000. J. A. Hamme, 123 E. Phila. St., York, archt. CD 2/5/57.

▲† **N. Y., Romulus**—HOUSING—BA 5/5—U. S. Eng., 111 E. 16th St., New York, Zone 3, 120 unit Capehart Housing, Seneca Ordnance Depot. $1,900,000. CD 4/6, under LB.

▲ **N. Y., West Hempstead**—SCHOOL—BA 5/14—Bd. Educ., West Hempstead Junior-Senior High School addn. $1,600,000. Reginald E. Marsh & Assocs., Howard C. Snyder & Assocs., 101 Park Ave., New York, N. Y., archts. CD 12/15.

▲ **Pa., Pittsburgh**—HEADQUARTERS—BA 6/1—William Penn Fraternal Assoc., Verhovey Bldg., 20 story headquarters of William Penn Insurance Bldg., Grant St. between 3rd and 4th Aves. $6,000,000. Lublin, McGaughy & Assocs., 220 W. Freemason St., Norfolk, Va., and 1300 Connecticut Ave. N. W., Wash., D. C., archts.-engrs. CD 3/13.

▲ **N. J., New Brunswick**—BIOLOGY—BA 6/9—Rutgers University, College Ave., 2, 3, and 4 story, masonry biology bldg. $3,500,000. Plans deposit $75. Perry, Shaw, Hepburn & Deane, 31 St. James Ave., Boston, Mass., archts. CD 7/25.

HEAVY CONSTRUCTION—LB & CA

NEW YORK—Dpt. P. Wks., State Office Bldg., Albany. Bids opened 4/2.

N. Y.—**Jess F. Howes**, Sidney Center, N. Y., LB $169,695.25, est. $211,000 (8 bidders), single span 124 ft bridge Copes Corners-Unadilla secondary hy. (County Rd. 3) over Butternut Creek east of Mt. Upton, FASS 59-8. Proj. S 481(1), Otsego Co.

N. Y.—Withdrawn from letting, Est. $377,000, four-span 244 ft. bridge and approaches to carry county rd. 11 over Cohocton River 2 mi. southeast of Bath, FASS 59-9. Proj. S-949(2), Steuben Co. CD 3/5.

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany. Bids opened 4/2.

N. Y.—**Binghamton Bridge & Foundations Co., Inc.**, R. D. #2, Endicott, N. Y., LB $283,872.28, Est. $361,000 (9 bidders), reconstr. 0.48 mi. section Belvidere-Angelica Secondary Hy. (County Rd. 20) incl. 3 span 275 ft bridge over Genesee River, Belvidere. FASS 59-7. Proj. S-529(1), Allegany Co.

N. Y.—**A. E. Ottaviano, Inc.**, 80 Brook St., Croton-on-Hudson, N. Y., LB $5,401,729.52, Est. $6,500,000 (9 bidders) constr. 1.9 mi. four-lane divided concrete Scajaquada Creek Expressway in Buffalo from Niagara Thruway eastward to Grant St. FASCE 59-1. Proj. U-1087(4), Erie Co.

N. Y.—**Ferguson Elec. Const. Co., Inc.**, 333 Ellicott St., Buffalo 3, N. Y., LB $122,795.00, Est. $162,000 (10 bidders), electrical lighting 14½ mi. of Niagara Thruway (Interstate Touring Rte. 90N) between Buffalo's east city line and South Grand Island Bridge. FINTC 59-1, NTC 59-2. Proj. I-865(19), Erie Co.

N. Y.—**Theodore Zoli Const. Co., Inc.**, Keesville, N. Y., LB $103,508.00, Est. $150,000 (9 bidders), resurf. 4.58 mi. Rte. 37, west of Racket River, east of Massena, St. Regis Indian Reservation. RC 59-23. Pt. 1 and Pt. 2, S. H. 1861 and SH 8396, Franklin and St. Lawrence Counties.

N. Y.—**Warren Bros. Roads Co.**, Box 12, Eastwood Station, Syracuse, N. Y., LB $148,687.00, Est. $186,000 (9 bidders) resurf. and strengthening 1.33 mi. sectiin Rte. 14, Watkins Glen south village line to south Dix-Montour. FARC 59-22. Proj. F-505(10), Schuyler Co.

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y., LB $251,771.00, Est. $293,000 (4 bidders), widn. and asphaltic concrete 2.63 mi. section Rte. 21, Rte. 15 intersection south of Wayland and extending Patchinville south Iseman Rd. Intersection, Loon Lake. FARC 59-21. Proj. F-375(8), Steuben Co.

N. Y.—**Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., LB $7,272,376.25, Est. $8,327,000 (5 bidders) 6.27 mi. section four-lane divided Heckscher State Parkway and 4.3 mi. access roads, north of Sunrise Hy. (Rte. 27) to Heckscher State Park, east of Bay Shore, concrete pavement except inside Park where blacktop, structures carry the Parkway over Sunrise Hy., Jefferson St., the LIRR and Hawthorne Ave. (combined), Union St. and Montauk Hy. and to carry Timber Point Rd. over the Parkway; traffic interchanges at Sunrise Hy. and Montauk Hy. HSP-591. Contr. 1. Suffolk Co.

N. Y.—**Slattery Contr. Co., Inc., & Slattery Tunnell Corp.**, 46-36 54th Rd., Maspeth 78, N. Y., LB $5,140,482.00, Est. $7,678,000 (8 bidders) constr. 1.82 mi. six-lane divided concrete section of Clearview Expressway (Interstate Touring Rte. 495) and 2.82 mi. of access and service roads, 38th Ave. to Willett Point Blvd. FICE 59-2. Proj. I-1112(11), Queens Co. CD 3/5.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany.

N. Y.—**County Asphalt, Inc.**, 129 Main St., Tarrytown, N. Y., CA $1,110,447, 6.63 mi. asphalt concrete, incl. 232.5 ft. (3 span) compressed WF beam bridge, 25.5 ft. (1 span) precast concrete beam bridge. Bainbridge-Masonville, Pt. 1B, Bainbridge-Masonville; Pt. 2, Sidney-Masonville, SH 1439, Rte. 206. Proj. S-273(2) F-6 548(5), Chenango and Delaware Counties.

N. Y.—**Terry Contracting, Inc.**, 11-11 34th Ave., Long Bainbridge-Masonville, Pt. 1B, Bainbridge-Masonville; Island City, N. Y., CA $4,985,295, 9 in. c. conc. pavement, misc. work 0.54 mi., incl. 2 hy. separations, compressed steel beam, 1 hy. separation welded plate, continuous girder, 1 pedestrian overpass welded truss plate girder, alterations to subway vents and station Prospect Expressway Fort Hamilton Parkway Interchange Greenwood Ave. to Beverly Rd. Proj. U-1081(4), Kings Co. Bids Jan. 29. CD 2/6, under LB.

▲ **W. L. Hailey Co.**, 314 42nd Ave. N., Nashville, Tenn., LB $1,190,000, total est. $10,500,000, Contr. 2, river intake, raw water pumping station and line, LOCKPORT, N. Y. Niagara Water Dist., Court House, Lockport, N. Y. Bids Apr. 2. CD 2/19.

(Continued on page 142)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

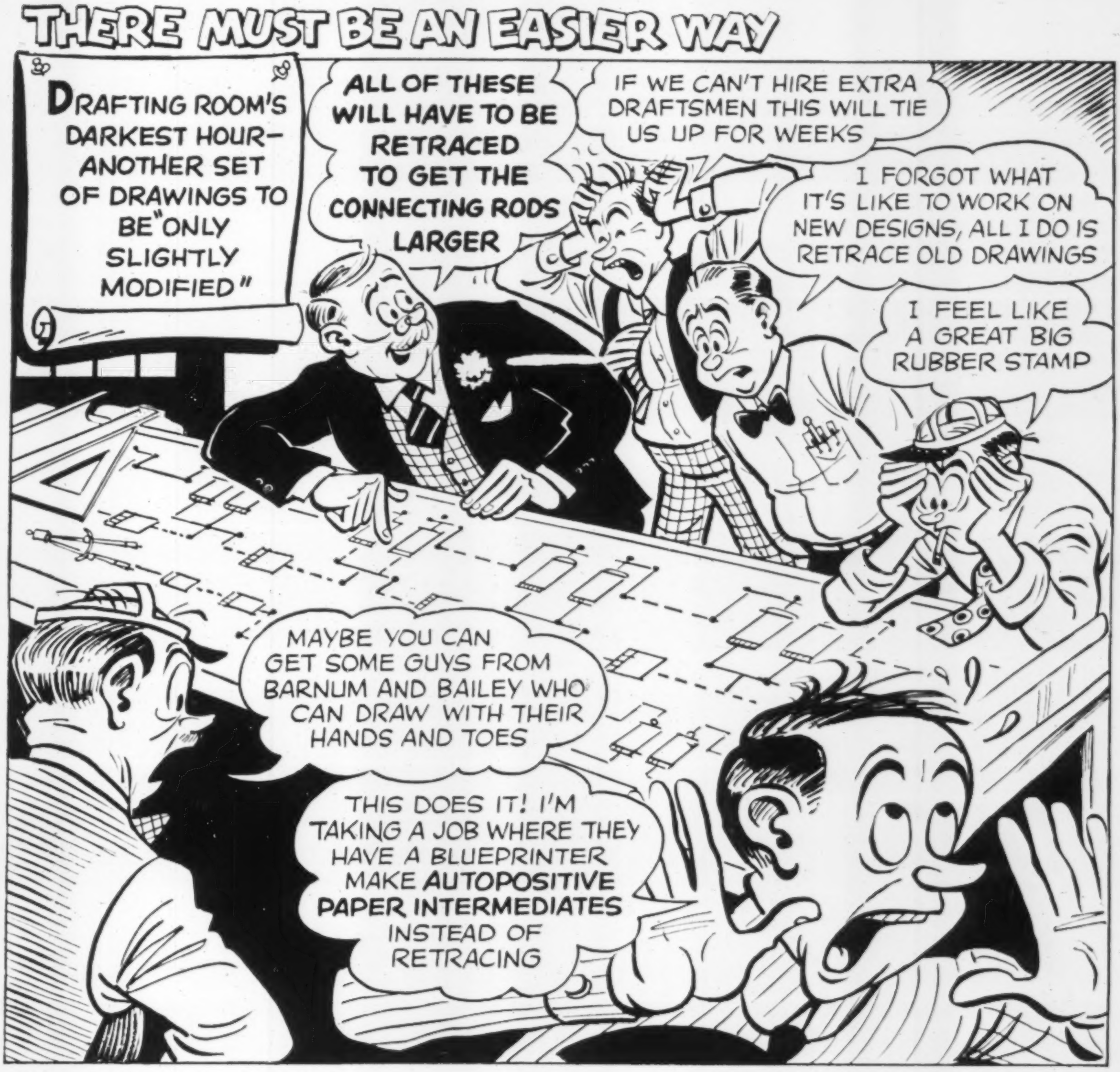
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.


THERE MUST BE AN EASIER WAY
"DRAFTING ROOM'S DARKEST HOUR— ANOTHER SET OF DRAWINGS TO BE "ONLY SLIGHTLY MODIFIED"
ALL OF THESE WILL HAVE TO BE RETRACED TO GET THE CONNECTING RODS LARGER
IF WE CAN'T HIRE EXTRA DRAFTSMEN THIS WILL TIE US UP FOR WEEKS
I FORGOT WHAT IT'S LIKE TO WORK ON NEW DESIGNS, ALL I DO IS RETRACE OLD DRAWINGS
I FEEL LIKE A GREAT BIG RUBBER STAMP
MAYBE YOU CAN GET SOME GUYS FROM BARNUM AND BAILEY WHO CAN DRAW WITH THEIR HANDS AND TOES
THIS DOES IT! I'M TAKING A JOB WHERE THEY HAVE A BLUEPRINTER MAKE AUTOPOSITIVE PAPER INTERMEDIATES INSTEAD OF RETRACING

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Position________________

Company________________

Street________________

City________________ Zone______

State________________

Kodak
TRADEMARK

(Continued from page 140)

Scrufri Constr. Co., Hyde Park Pl., Niagara Falls, N. Y., LB **$1,678,540, Contr.** 312 m.g. treatment plant (Lockport, N. Y.);

Wm. A. Bauley, Auburn, N. Y., LB **$1,714,000** alternate Contr. 3, 12 m.g. treatment plant (Lockport, N. Y.);

Ch. H. Smith & Sons, Kennett Square, Pa., LB **$3,243,665**, Contrs. 4 and 5, water supply mains (Lockport, N. Y.);

W. J. Irwin & Sons, Irwin Rd. Tonowanda, N. Y., LB **$524,188**, Contr. 7 water supply mains; LB **$376,500**, Contr. 8 water supply mains (Lockport, N. Y.);

Wright & Kremers, Main St., Niagara Falls, N. Y., LB **$297,767**, Contr. 9 booster pump station and service center (Lockport, N. Y.);

Graver Tank & Mfg. Co., Grant Bldg., Pittsburgh Pa., LB **$277,290** (Steel) Contr. 10 two 3 m.g. reservoirs (Lockport, N. Y.).

▲ **Forrest Co.**, 1135 S. 9th St., Harrisburg, Pa. CA **$1,442,940 (B)** CA **$1,313,035, (C)** Contr. 1 intercepting sewers, McKEESPORT, PA. Municipal Auth. of McKeesport, City Hall, McKeesport, Pa. Bids Jan. 27, Grand Total $5,673,471. CD 12/23;

Christopher Constr. Co., 3150 Valley View Dr., Columbus, O. CA **$313,289 (A)** Contr. 1 intercepting sewers, (McKeesport, Pa.);

Golden Triangle Constr. Co., Inc., 2552 Aliquippa St., Pittsburgh 13, Pa. CA **$327,793 (D)** Contr. 1, intercepting sewers, (McKeesport, Pa.);

Birmingham Constr. Co., 208 Savings & Loan Bldg., Birmingham, Mich. CA **$1,064,305** general constr. Contr. II, sewage treatment plant (McKeesport, Pa.);

Remsco Assocs., Box 59, Matawan, N. J., CA **$1,013,221**, combination plumbing heating and piping and equipment Contr. II, treatment plant (McKeesport);

Devlin Electric Co., 509 Bessemer Bldg., Pittsburgh 22, Pa. CA **$198,888**, electrical work Contr. II treatment plant (McKeesport, Pa.).

▲ **John F. Casey Co.**, Contractors, Aspinwall (Br. Pittsburgh), Pa. CA **$1,570,135**, est $1,500,000; design and construct, substructures, piers and abutments for 62nd St. bridge, PITTSBURGH, PA., Allegheny County, County Office, Pittsburgh, Pa. Awarded Apr. 1. CD 5/15/56.

▲ **Williams Constr. Co., Inc.**, P. O. Box 5045, Baltimore 20 Md., LB **$2,227,470** (5 bidders) grading, drainage section of Anacostia Freeway from Chesapeake St. to D. C. Line, WASH., D. C. D. C. Govt., Dpt. Highways, 499 Pa. Ave. N.W., Wash., D. C. Bids Apr. 3. CD 3/11.

Plymouth Electric Co., 100 Indiana Ave. N. W., Wash. D. C. LB **$893,000** (6 bidders) conversion electrical installations in Library of Congress, WASH., D. C. Office of Architect of the Capitol, U. S. Capitol, Wash. D. C. Bids Mar. 17. CD 12/12.

BUILDINGS—LB & CA

▲ **Leon DeMattheis & Sons and Leon DeMattheis Constr. Co.**, 827 Elmont Rd., Elmont, N. Y., LB **$3,625,820** (9 bidders), fdns. and general contract Base Bid A, rein.-con. design, Woodrow Wilson HOUSES, Proj. No. NYS-89, E. 106th St., Franklin D. Roosevelt Dr., E105th St. and 1st Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Apr. 3. CD 3/4;

S. S. Silberblatt, Inc., 25 W. 45th St., New York 36, N. Y., LB **$3,393,000** fdns. and general contract, Base Bid B, structural steel design, Woodrow Wilson Houses, (New York, N. Y.).

▲† **U. S. Eng.**, 111 E. 16th St., New York 3, N. Y., rejected bids Mar. 31, 120 unit Capehart HOUSING at Seneca Ordnance Depot, ROMULUS, N. Y. LB **$1,958,000** Will re-advertise. CD 4/2, under LB.

Dygert Constr. Co., 827 Rowland St., Syracuse, N. Y. CA Est **$450,000**, CHURCH, SYRACUSE, N. Y. First Methodist Church, 332 S. Warren St., Syracuse, N. Y: Carl Clark, 625 James St., Syracuse, N. Y., archt.

Gallagher & Vault, Bradbury Dr. Onondaga Hill, Syracuse, N. Y., CA Est **$650,000**, CHURCH and RECTORY, SYRACUSE, N. Y. Most Holy Rosary R. C. Church, c/o Pederson, Hueber & Hares, Syracuse-Kemper Bldg., Syracuse, N. Y., archts.

▲ **Rappaport & Golden**, c/o Dante J. D'Anastasio archt., 1815 Federal St., Camden, N. J., Separate Contracts, **$3,204,000**, RESIDENTIAL DEVELOPMENT (267), CAPE MAY, N. J.

▲ **Wm. L. Blanchard Co.**, 45 Polnier St., Newark, N. J., CA **$1,498,290**, general contract, HOSPITAL addn., DOVER, N. J. Dover General Hospital, Jardine Rd., Dover, N. J. CD 3/26, under LB.

▲† **B. J. Lucarelli & Co.**, 22 Orchard St., Jersey City, N. J., LB **$1,849,200** (6 bidders), 130 unit Capehart HOUSING, FORT MONMOUTH, N. J. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Apr. 2. CD 3/20.

▲ **Arthur Venneri Co.**, Rahway Ave., Westfield, N. J., LB **$1,947,000**, general contract, Harrison Gardens, HOUSING Proj. No. NJ 15-3, HOBOKEN, N. J. Housing Auth. City of Hoboken, 400 Harrison St., Hoboken, N. J. Bids Mar. 26. CD 3/6.

▲ **Fred J. Brotherton, Inc.**, 185 Atlantic St., Hackensack, N. J., CA **$2,000,000**, WAREHOUSE addn., KEARNY, N. J. American Stores Co., 124 N. 15 St., Phila., Pa. Ganteume & McMullin, 99 Chauncy St., Boston, Mass., archts.-engrs.

▲ **Wm. L. Blanchard Co.**, 45 Poinier St., Newark, N. J., CA Est **$3,000,000**, HEADQUARTERS BLDG., MORRISTOWN, N. J. Jersey Central Power & Light Co., and New Jersey Power & Light Co., Rte. 53, Denville, N. J. T. J. Kauffeld, 150 Broadway, New York, N. Y., engr. CD 3/20.

John A. Robbins Co., 3 Penn Center Plaza, Phila., Pa., CA **$450,000**, SUPERMARKET and parking area, MOORESTOWN, N. J. Jarnap, Inc., 3 Penn Center, Phila., Pa.

Vivian Heights, Inc., 24 Market St., Saddle Brook, N. J., Own Forces, **$400,000**, 16 HOUSES, Terrace Place, NEW MILFORD, N. J.

▲ **Thomas Constr. Co.**, 165 Haledon Ave., Paterson, N. J., LB **$1,163,800**, HIGH SCHOOL, Church St., for North Haledon, Haledon and Prospect Park, NORTH HALEDON, N. J. Manchester Regional High School Dist.; Haledon, N. J., Bids Mar. 23. CD 3/13.

Robert Anderson, 65 Wilson Ave., Riverdale, N. J., Own Forces, **$425,000** 20 HOUSES, Riverdale Ave., RIVERDALE, N. J.

Fisher Builders, 12 Middaugh St., Somerville, N. J., Owner Builds, **$450,000**, 25 HOUSES, Meadow Lane, SOMERVILLE, N. J.

Seaview Builders, Tuckerton, N. J., CA **$667,500**, 113 unit RESIDENTIAL DEVELOPMENT, Boulevard, etc., TUCKERTON, N. J. Tuckerton Beach Co., Inc., Tuckerton, N. J. Derick B. Kipp, 363 Bloomfield Ave., Montclair N. J., archt.

Kruvant Constr. Co., 79 Lincoln Park, Newark, N. J., Own Forces, **$400,000**, 1 story, approx. 120x165 ft. SUPERMARKET, Passaic Ave., WEST CALDWELL, N. J. Atlantic & Pacific Co., lessee. Stephen J. Potter, 410 Colonial Ave., Union, N. J., archt.

Lowell Gable Co., 101 E. Lancaster Ave., Paoli, Pa., CA **$600,000**, RETAIL STORE, ARDMORE, PA. Northside Holding Co., Inc., 5 E. Montgomery Ave., Bala Cynwyd, Pa. W. W. Potter, 321 St. Davids Rd., Wayne, Pa., archt. CD 9/23/57.

Cairnhill Corp., 1424 York Rd. Abington, Pa., Separate Contracts, **$900,000**, RESIDENTIAL DEVELOPMENT (60) DeKalb Pike, etc., CENTER SQUARE, PA.

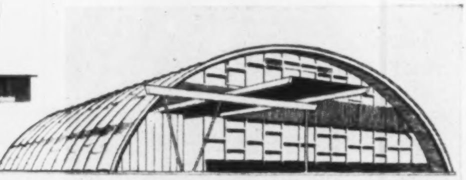
Lawrence J. Hogan, Brookfield and Boncour Rds., Cheltenham, Pa., Separate Contracts, **$650,000**, 42 RESIDENTIAL DEVELOPMENT, Shippack Pike, CENTER SQUARE, PA.

▲ **Associated Contractors**, Conneaut Lake, Pa. CA **$1,233,097**, general constr. SECONDARY SCHOOL, for Reynolds Area Jt. School Bd., Greenville R.D. 5, GREENVILLE, PA. Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Feb. 26. CD 3/3, under LB.

▲ **Rust Engineering Co.**, 930 Ft. Duquesne Blvd, Pittsburgh, Pa., CA Est. **$2,500,000**, PLANT to mfg. thermostatic controls, NEW STANTON, PA. Robertshaw-Fulton Control Co., 110 E. Otterman St., Greensburgh, Pa. CD 9/25, under Pa., Youngwood.

▲ **Mellon-Stuart**, 210 E. Parkway, Pittsburgh, Pa., CA Est **$1,500,000**, design and construct 15 store SHOPPING CENTER with parking, PITTSBURGH, PA. Union Real Estate Co. of Pittsburgh, Standard Life Building

(Continued on page 144)



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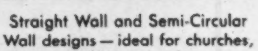

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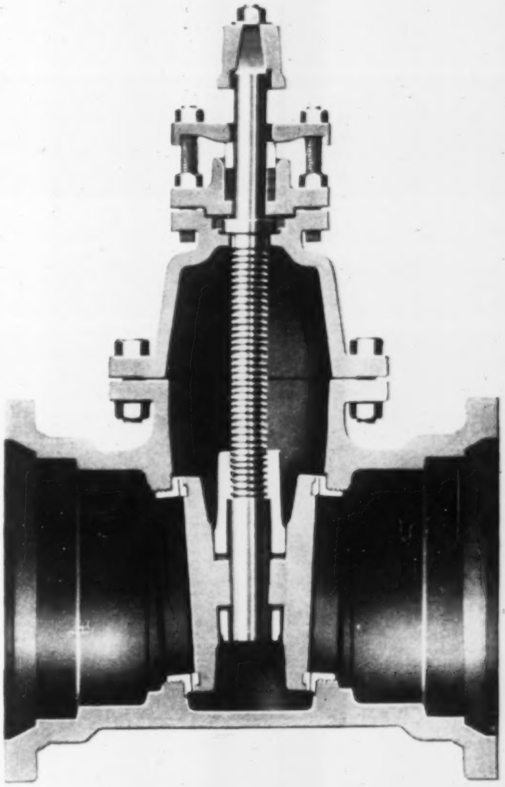

(Continued from page 142)

Pittsburgh, Pa. J. Kenneth Myers, 3915 Saw Mill Run Blvd., Pittsburgh, Pa., archt. Awarded Mar. 15.

▲ **United Constr. Co.,** 1204 Lincoln Ave., Pittsburgh 6, Pa., LB **$1,046,000** (8 bidders), general constr. JUNIOR-SENIOR HIGH SCHOOL for Ridgeway Area Jt. School Bd. (Proj. 721-585), RIDGEWAY, PA. Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Apr. 2. CD 3/4.

Suburban Bldg. & Development Co., Haverford, Pa., CA **$460,000,** RESIDENTIAL DEVELOPMENT (23), WILLISTOWN, PA. Fox Run Farms Corp., c/o R. W. Siddell, Haverford, Pa.

R. W. Siddell, Haverford, Pa., Separate Contracts, **$510,000,** RESIDENTIAL DEVELOPMENT, (17) Street Rd., etc., WILLISTOWN, PA.

▲ **Bd. Educ., Anne Arundel Co.,** Annapolis, Md., cancelled contract award 1 and 2 story masonry Arundel JUNIOR HIGH SCHOOL near Odenton, ANNAPOLIS, MD. CA **$2,085,000.** CD 3/19, under CA.

† **Norair Eng. Co.,** 1118 22nd St. N.W., Wash., D. C., LB **$478,515,** LABORATORY EQUIP. and MECHANICAL WORK, Biologics Standards Laboratory, BETHESDA, MD. General Services Admin., 19th and F Sts. N.W., Wash., D. C. CD 3/26/57.

▲ **Frederick Constr. Co.,** 240 W. South St., Frederick, Md., LB **$1,374,064,** (19 bidders) BUSINESS and PUBLIC ADMINISTRATION BLDG., COLLEGE PARK, MD. University of Maryland, College Park, Md. Bids Apr. 2. CD 3/10.

▲ **Victor R. Beachamp, Inc.,** 431 Cedar St. N.W., Wash., D. C., CA **$1,200,000** EMBASSY BLDG., 3005 Massachusetts Ave. N. W., WASH., D. C. Iranian Embassy, 3005 Massachusetts Ave. N. W., Wash., D. C., Bids Feb. 11. CD 3/2, under LB.

▲† **McCloskey & Co.,** 1620 W. Thompson St., Phila., Pa., CA **$10,950,500,** FEDERAL OFFICE No. 6, 4 and CM Sts. S.W., WASH., D. C. General Services Admin., 19 and F Sts. N. W., Wash., D. C. Bids Mar. 13. CD 3/17, under LB.

Gordy & Son, Washington Ave. and DuPont Blvd., New Castle, Del., Separate Contracts, **$500,000,** RESIDENTIAL DEVELOPMENT, (71) NEW CASTLE, DEL.

▲ **E. I. duPont de Nemours,** duPont and Nemours Bldgs., Wilmington, Del., Own Forces **$1,000,000,** 2 story, 23,000 sq. ft. Chestnut Run SALES DEVELOPMENT and CUSTOMER SERVICE LABORATORY, WILMINGTON, DEL. CD 8/21/46.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Ky., Covington**—RUNWAY PAVING—BA 4/22—Kenton County Airport Bd., Court St., grading, drainage work runway extension for Greater Cincinnati Airport. $1,000,000. Hall, McAllister, Stockwell, 706 Walnut St., Cincinnati, O., engrs. CD 7/7, under LB.

BUILDINGS—BA

Ala., Andalusia—HOUSING—BA 4/28—Andalusia Housing Auth., City Hall, 76 units housing West Haven 44 unit housing Lakeview. $1,500,000. Pembleton & Mims, Title Guarantee Bldg., Birmingham, archts. CD 4/1.

Ky., Henderson—EDUCATIONAL—BA 4/28—Commonwealth of Ky., Div. Purchases, Frankfort, brick rein-con. educational bldg. University of Ky. extension. $425,000. Plans deposit $25. Extended date. Meriwether Marye & Assocs., 218 E. Short St., Lexington, archts. CD 4/2.

N. C., Southern Pines—PLANT—BA 4/28—Trimble Inc., 634 Lexington St., Rochester, N. Y. 55,000 sq. ft. mfg. plant. John D. Latimer & Assocs., Snow Bldg., Durham, archts. CD 3/13.

† **Ky., Fort Knox**—SCHOOL—BA 4/30—Housing & Home Finance Agency, 905 Hoffman Bldg., Louisville, Proj. Ky.-58-C FED-2-BB. 44,000 sq. ft. high school. Over $400,000. Plans deposit $7.50. Wm. G. Crawford, 4030 Alton Rd., Louisville, Zone 7, archt. Southern Eng. Co., 322 W. Jefferson, Louisville, Zone 2, engr. CD 9/2, under Fort Knox Independent School Dist. as owner.

▲† **Miss., Jackson**—HOSPITAL—BA 6/9—Veterans Admin., Munitions Bldg., Wash., D. C. GM & S Hospital and Regional Office Bldg. 1, Veterans Administration Center. $13,600,000. Overstreet, Ware & Ware, 411 S. State St., Jackson, Miss., and Reynolds, Smith & Hills, 227 Park, Jacksonville, Fla., archts. CD 7/28.

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. Dpt., Raleigh, Bids opened 3/31.

N. C.—**Ray D. Lowder Inc.,** Albemarle, N. C., LB **$1,012,483,** grading, 9.53 mi. from point 1.5 mi. southeast of Apex, northeast across county to point approx. 0.52 mi. south of U. S. 1 near Method. 8.14773 F-637 (2), Wake Co.

N. C.—**Thompson-Arthur Paving Co.,** Box 1197, Greensboro, N. C., LB **$1,319,035,** fine grading, SABC and b. conc. binder and surf. 11.19 mi. addnl. lane of Interstate Rte. 85 between Greensboro and N. C. Rte. 61. 8.15417 I-85-3 (11) 125, Guilford Co.

N. C.—**Clinchfield Concrete Co., Inc.,** Kingsport, Tenn., LB **$2,906,182,** CABC, 9 in. concrete paving and roadside rest station 15.01 mi. Interstate Rte. 40 between Morganton and Hildebran. 8.18187 I-40-2 (20) 106 F 700 (24), Burke Co. CD 3/19.

NORTH CAROLINA—State Hy. Dpt., Raleigh, Bids opened 3/31.

N. C.—**T. A. Loving & Co.,** Goldsboro, N. C., LB **$195,186,** bridge over North River on US 70 approx. 5 mi. northeast of Beaufort. Proj. 8.13038 S-1156 (1), Carteret Co. CD 3/19.

N. C.—**Barrus Constr. Co.,** Box 395, Kinston, N. C., LB **$154,718,** approaches. Proj. 8.13038 S-1156 (1), Carteret Co. CD 3/19.

N. C.—**Wilson Constr. Co., Inc.,** Box 603, Salisbury, N. C., LB **$195,904** structures 9.53 mi. from point 1.5 mi. southeast of Apex northeast across country to point approx. 0.52 mi. south of U. S. 1 near Method. Proj. 8.4772 F-637 (2), Wake Co. CD 3/19, under Streets and Roads.

▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Sq. S. W. Atlanta, Ga.

H. M. Pafford, Jr., Box 145, Waycross, Ga., CA **$1,929,210,** 4 double and 10 single grade separation structures and one single railroad underpass on SR 29 to Old US 41 road, Atlanta Circumferential Rte. beginning Jct. with FI-285 to north and extending easterly to old US 41, I-IN-407-19 (2) (new). Bids Mar. 20. CD 3/25, under LB.

† **Robert E. Lee & Co., Inc., and Cherokee, Inc.,** P. O. Box 296, Columbia, S. C., CA **$559,304** site preparation and roads for Ordnance Storage Area, Robins Air Force Base, Houston Co., IFB-ENG-09-133-59-47, MACON, GA., U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Mar. 12. CD 3/18, under LB.

Whaley & Minter Constr. Co., Box 3224, Station A, Savannah, Ga., CA **$540,504,** airport terminal bldg., Travis Field, SAVANNAH, GA. City, City Hall, Savannah, Ga. Bids Nov. 25. CD 12/9, under LB.

FLORIDA—State Rd. Dpt., Tallahassee.

A. B. Covell, DeFuniak Springs, Fla., CA **$570,330,** Type 2 surf. tr. 11.868 mi. SR S-181, Jobs Nos. 60690-3150, Fed. Aid Proj. No. S-524 (1), Walton Co. Bids Feb. 25, awarded Apr. 3. CD 3/2, under LB.

▲ **Edward M. Fleming Constr. Co.,** 4121 NW 25 St., Miami, Fla., CA **$1,805,166,** consumer service and 20th Street Terminal Bldgs. addns., Miami International Airport, MIAMI, FLA. Dade Co. Port Auth., Courthouse, Miami, Fla. Bids Mar. 3, awarded Apr. 2. CD 3/10, under LB.

Hubbard Constr. Co., P. O. Box 7217, Orlando, Fla., CA **$845,823,** airport runway, taxiway, ORLANDO, FLA. City, City Hall, Orlando, Fla. Bids Apr. 1. CD 3/24.

Arnold Constr. Co., 7 Murray Bldg., Palm Beach, Fla., LB **$750,671,** Venetian Isles Yacht Club, end of NE 27 Terrace, Lighthouse Point, POMPANO BEACH, FLA. Yacht Club Development Co., c/o Hansen & Romano, archts., 2821 Atlantic Blvd., Pompano Beach, Fla. Bids Mar. 27. CD 3/10.

▲† **Meador Contg. Co.,** 1807 Old Shell Rd., Mobile, Ala., and **Trarwick Constr. Co.,** Chipley, Fla., LB **$615,302** telephone lines, Brookley Air Force Base, Inv. 01-600-59-952, MOBILE, ALA. Purchasing & Contracting Office, Bldg. S-517, Brookley Air Force Base, Mobile, Ala. Bids Mar. 31. CD 9/17.

Baroco Electric Co., P. O. Box 407, Pensacola, Fla., LB **$656,889,** telephone lines from Site 3 to Site 15 Brookley Air Force Base, INV-01-601-59-953. (Mobile, Ala.)

† **Empire Gas Engineering Co.,** 7 Baltimore Place N.W. Atlanta, Ga., LB **$585,000** (9 bidders) roads and utilities Navy's new Auxiliary Air Station MERIDIAN, MISS. Dist. P. Wks. Office, Sixth Naval Dist. Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Apr. 2. CD 3/12.

Mid-State Paving Co., Meridian, Miss., CA **$505,531,** street work, paving 32 mi. streets and avenues, MERIDIAN, MISS. City, City Hall, Meridian, Miss. Bids Mar. 30.

▲† **A. B. Newton & Co.,** P. O. Box 191, Vidalia, Ga., CA **$2,309,620,** aircraft maintenance hangar and operations bldg., U. S. Naval Auxiliary Air Station, NBy 19982, Spec. 19982-58, MERIDIAN, MISS. Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 19. CD 3/24, under LB.

BUILDINGS—LB & CA

† **J. Kennon Perrin Co.,** 5th and Cary Sts., Richmond, Va., CA **$573,140,** 1 story 82x217 ft. and 65 ft. x 106 ft. with connecting corridor, 45x75 ft. steel, concrete frame, brick faced masonry SIGNAL BLDG., ENG-44-118-59-22, FORT LEE, VA. U. S. Eng., foot of Front St., Norfolk 1, Va. Bids Mar. 18. CD 3/24, under LB.

Carpenter Constr. Co., Bank of Commerce Bldg., Norfolk, Va., LB **$840,000,** Base Bid with $8,000 alternate Plus (5 bidders) HEALTH SERVICES, NORFOLK, VA. Union of King's Daughters, 100 York St., Norfolk, Va. King & Reed, 811 W. 21st St., Norfolk, Va., engrs. Bids Apr. 1.

R. R. Richardson & Co., 25th St. and Newport Blvd., Norfolk, Va., LB **$852,000,** Base Bid with minus **$15,000** alternate health services (Norfolk, Va.)

▲ **Persun Constr. Co.,** 604 7 Ave., Huntington, W. Va., CA **$1,638,624,** HEALTH AND PHYSICAL EDUCATION BLDG. at Marshall College, HUNTINGTON, W. VA. State Bd. Educ., Capitol Bldg., Charleston 5, W. Va., Bids Jan. 21, awarded March 31. CD 2/4, under LB.

Charles J. Craig Constr. Co., 1610 Westminster Dr., Columbia, S. C., CA **$811,073,** 102 addnl. HOUSING units, North Charleston, CHARLESTON, S. C. Charleston City Housing Auth., 20 Franklin St., Charleston, S. C. Bids Mar. 31. CD 3/12.

▲ **E. I. duPont de Nemours & Co.,** duPont & Nemours Bldg., Wilmington, Del., Owner Builds, **$2,000,000,** FILM MANUFACTURING PLANT, FLORENCE, S. C.

▲ **Florida Builders, Inc.,** 700 43 St. South, St. Petersburg, Fla., LB **$1,059,860** (6 bidders) 73 unit Capehart HOUSING, FORT STEWART, GA. U. S. Eng., P. O. Box 889, Savannah, Ga. Bids Mar. 31. CD 3/20.

Arkin Constr. Co., 1827 Purdy Ave., Miami Beach, Fla., LB **$410,000,** BANK, LeJuene Rd. and Almeria Ave., CORAL GABLES, FLA. City National Bank, c/o Edwin T. Reeder & Assocs., archts., DuPont Plaza Center, Miami, Fla., Bids Mar. 31. CD 3/10.

Southeastern Builders, Inc., 401 Coral Way, Coral Gables, Fla., Owner Builds, **$500,000,** 82 RESIDENCES, Sunrise Blvd. (Sunrise Heights) FORT LAUDERDALE, FLA.

Lawrence Padron, 2311 Fogerty St., Key West, Fla., Owner Builds, **$400,000,** 40 RESIDENCES, 17 St., N. Side Dr., 11 St., Riviera Dr., KEY WEST, FLA. Edward M. Ghezzi, 7 SE 2 Dr., Homestead, Fla., archt.

Clutter Constr. Co., 377 Westward Dr., Miami Springs, Fla., LB **$774,000,** Brownsville HIGH SCHOOL, NW 50 St. and NW 23 Ave., MIAMI, FLA. Dade Co. Bd. P. Instruction, Admin. Bldg., 275 NW 2 St., Miami, Fla. Bids Apr. 1. CD 3/18.

Edward J. Gerrits, 3465 NW 2 Ave., Miami, Fla., CA **$668,886,** 9 COTTAGES, alteration, addn., Hospital Rd. (South Miami) MIAMI, FLA. Bd. Comrs. Dade Co., Courthouse, Miami, Fla. Lloyd F. Vann Assocs., 101 NW 12 Ave., Miami, Fla., archts. CD 11/9/56.

Kenneth Smith Constr. Co., 219 Magnolia Ave., Daytona Beach, Fla., LB **$426,479,** Base Bid 1, Pineridge Elementary SCHOOL, Vanderbilt Lane and Cambridge Dr., Cocoa, TITUSVILLE, FLA. Brevard Co. Bd. P. Instruction, Titusville, Fla. Bids Mar. 31. CD 3/18.

Liles, McElvy & Rutland, Decatur, Ala., Own Forces, **$493,750,** 79 RESIDENCES, West Lawn Subdivision, DECATUR, ALA.

▲† **Florida Builders, Inc.,** 700 43 St. S., St. Petersburg, Fla., CA **$6,099,600,** 3,400 unit Capehart HOUSING, FORT RUCKER, ALA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Dec. 10. CD 12/16, under LB.

Hugh F. Penn, Hartselle, Ala., Own Forces, **$640,000,** 46 HOMES, Bethel Rd., HARTSELLE, ALA.

▲ **Billy C. Tanner,** Hartselle, Ala., Own Forces, **$3,000,000,** 200 HOMES, Tanner Heights, HARTSELLE, ALA.

† **A. K. McInnis, Jr.,** P. O. Box 214, Hattiesburg, Miss., LB **$574,000,** 2 BATTALION AREAS, CAMP SHELBY, MISS. State Military Dpt., State Office Bldg., Jackson, Miss. Bids Apr. 1. CD 2/26.

G. E. Bass & Co., P. O. Box 1033, Jackson, Miss., CA **$855,905,** 1 story, brick 65-bed Montfort Jones Memorial HOSPITAL, KOSCIUSKO, MISS. Bd. Supervs., Attala Co., Kosciusko, Miss. Bids Mar. 17. CD 3/23, under LB.

Pittman Constr. Co., Box 8116, New Orleans, La., CA **$759,964,** 2 story, rein.-con. block HOSPITAL, JENNINGS, LA. Jennings American Legion Hospital, Jennings, La. Bids Mar. 3. CD 3/10, under LB.

Resweber & Assn., Box 266, St. Martinville, La., CA **$431,800** (6 bidders) HIGH SCHOOL, ST. MARTINVILLE, LA. Parish School Bd., St. Martinville, La. Bids Apr. 2. CD 3/26.

George A. Caldwell, Box 477, Baton Rouge, La., LB **$633,827** (19 bidders), 1 story, brick, steel Lane Memorial HOSPITAL, ZACHARY, LA. Bd. Comn. Dist. No. 1, East Baton Rouge Parish, Zachary, La. Bids Apr. 1. CD 3/6.

The Dawson-Evans Constr. Co., 5300 Vine St., St. Bernard 17, O., LB **$644,888,** EDUCATIONAL BLDG. (northern extension) for University of Ky., COVINGTON, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky. Bids Apr. 2. CD 6/12.

Encrete, Inc., 2360 Dorothy Ave., Dayton, O., CA Est. **$600,000,** 1 story, brick Standiford MOTEL addn., near Lee Air Terminal, LOUISVILLE, KY. Jefferson Motel, Inc., 7900 Reading Rd., Cincinnati, O.

▲ **Sullivan & Cozart, Inc.,** 822 W. Ky., Louisville, Ky., LB **$1,244,680** (5 bidders) ALUMNI and DORMITORY, BEREA, KY. Berea College, Berea, Ky. Bids Apr. 2. CD 3/19.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—BA 5/11—Grand Trunk Western R.R. Co., C. J. Morris, ch. engr., 131 W. Lafayette St., Detroit, Mich.—viaduct 139th St. over Cal-Sag Channel. $3,000,000. Sverdrup & Parcel, 915 Olive St., St. Louis, Mo., engrs. CD 10/17.

BUILDINGS—BA

▲ **O., Akron**—SCHOOL—BA 4/24—Springfield Twp. Bd. Educ., 2966 Sanitarium Rd., furnishing, erection structural steel for Howard G. Schrop Junior High School. $1,280,000. Plans deposit $10. W. B. Huff & Assocs., 1050 N. Main St., archts. CD 1/14.

O., Akron—SCHOOL—BA 4/28—Franklin Twp. School Dist., 675 Manchester Rd., high school. $800,000. Plans deposit $100. Firestone & Motter, 1412 Cleveland Ave. N.W., Canton, archts. CD 9/7.

Ill., Litchfield—SCHOOL—BA 4/29—Bd. Educ., 2 story high school addn., State St. $425,000. D. Clarence Wilson, Mt. Vernon, Ill., archt.

▲ **O., Columbus**—HOUSING—BA 4/29—Columbus Metropolitan Housing Auth., 425 W. Rich St., Zone 22, Housing Projects Ohio 18 and 1-9, 7 bldgs., 2 story, frame with brick veneer within existing Sullivant Gardens Project and 7 bldgs. adjacent to Lincoln Park Project. Plans deposit $50. Wright-Gilfillen, 794 Northwest Blvd., Zone 8, archts. CD 11/19/52.

▲ **O., Avon Lake**—SCHOOL—BA 4/30—Bd. Educ., 175 Avon Belden Rd. Junior High School. $1,600,000. Plans deposit $60. Mellenbrook, Foley & Scott, 20 Beech St., Berea, archts. CD 9/17.

▲ **Ind., Indianapolis**—CITY-COUNTY OFFICE—BA 5/12—City-County Bldg. Auth., 543 Illinois Bldg., city-county office. Total $29,000,000. Allied Architects

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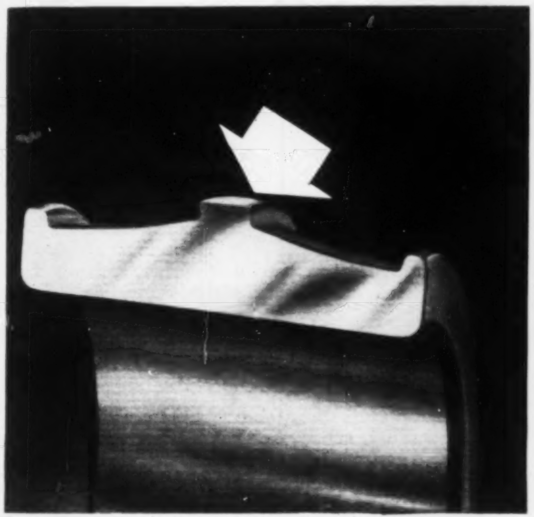

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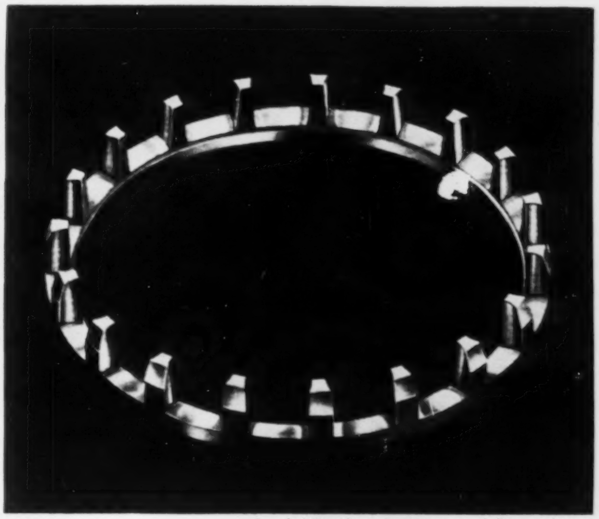

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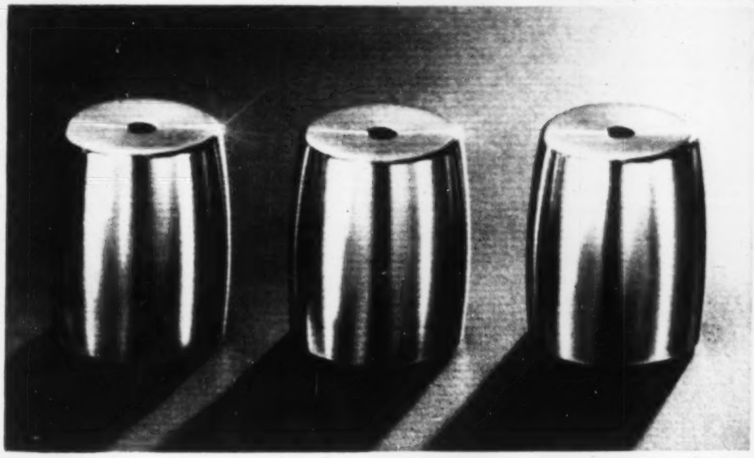

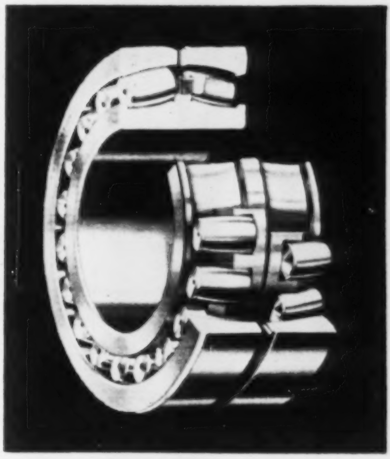

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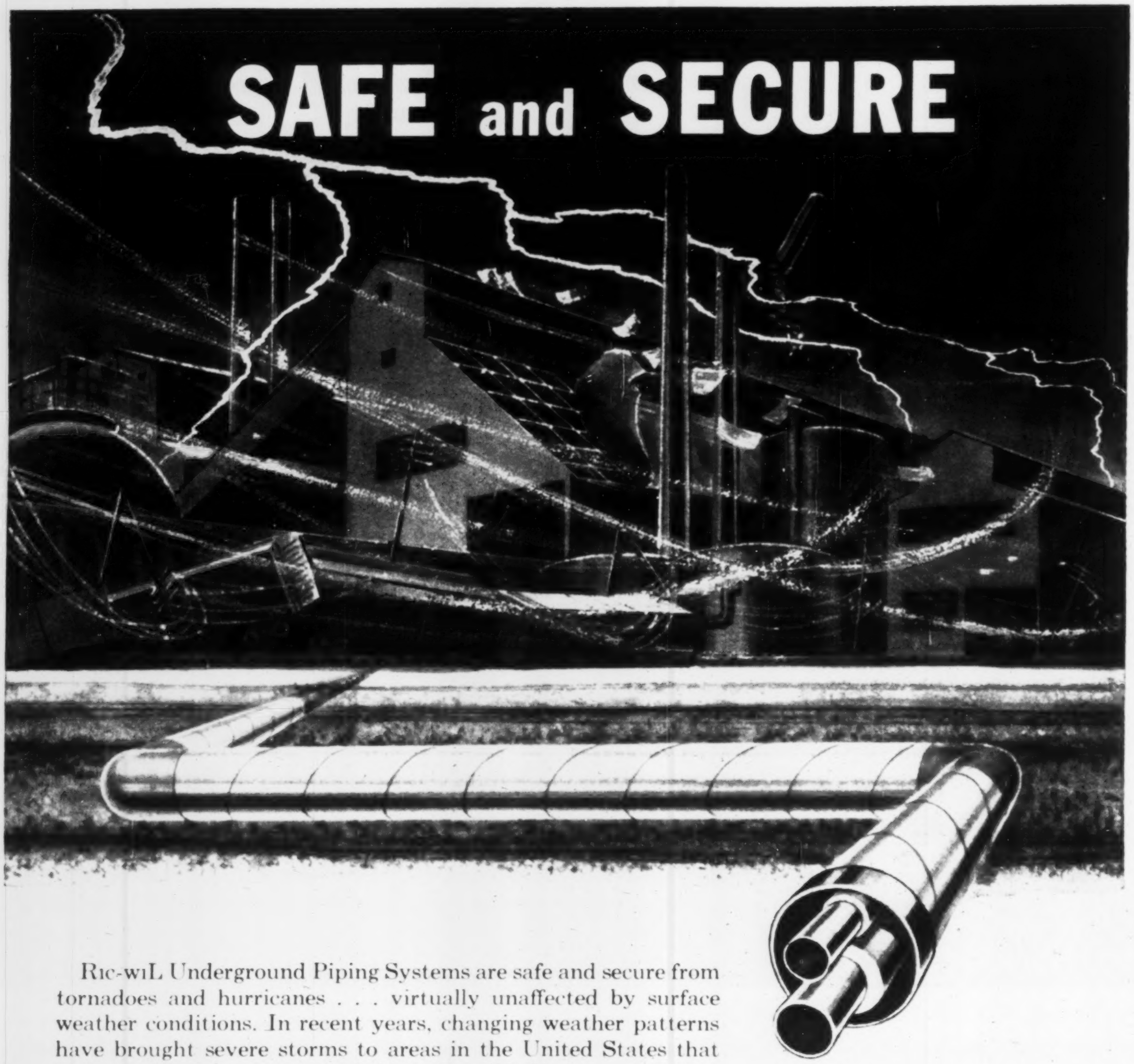

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BARBERTON, OHIO
IN CANADA: THE Ric-wiL COMPANY OF CANADA LIMITED

(Continued from page 144)

& Engineers of Indianapolis, Inc., Rm. 1233, 130 E. Washington St., engrs. CD 3 23.

BUILDINGS—SLC

▲ Ill., Urbana—PLANT—Magnavox Co., 115 W. Elm St., soon lets contract superstructure 1 story, 62,000 sq. ft. plant addn., $1,200,000. Daily, Dolk & Dietz, 211 Race St., engrs. CD 3 27.

HEAVY CONSTRUCTION—LB & CA

Harry Miller Excavating Co., Ravenna-Louisville Rd., Suffield, O., LB **$720,988** vitrified, LB **$714,337** for metal piping, est. $700,000 (8 bidders) sanitary sewers, North Springfield sanitary sewers to serve 1,664 homes in area Mogadore, AKRON, O., Commrs. Summit Co. Court House, Akron, O. Bids Apr. 2. CD 3 25.

▲† **Darin & Armstrong, Inc.**, 2041 Fenkell Ave., Detroit, Mich., CA **$1,809,718**, Schedule 1 only, SAC composite facilities, Clinton County Air Force Base, ENG-46-022-59-30, WILMINGTON, O., U. S. Eng., P.O. Box 2127, Huntington 18, W. Va. Bids Mar. 27. CD 3 12.

Curry Constr. & Supply Co., 413 S. Washington St., Bloomington, Ind., LB **$614,845**, sewers, MARTINSVILLE, IND., City, City Hall, Martinsville, Ind. Bids Apr. 2. CD 2 18 47.

Tousley Constr. Co., 425 E. St. Clair St., Indianapolis, Ind., LB **$348,076**, sewage disposal plant (Martinsville, Ind.).

▲ **ILLINOIS**—Dpt. P. Wks. & Bldg., Div. Hys., Centennial Bldg., Springfield.

—**Orr Constr. Co.**, 27 E. 19 St., Chicago Heights, Ill., CA **$1,950,000**, dual lane 2 conc. paving 4.15 mi. and Bridges, FA-4 near Marion, Williamson Co. CD 3 17, under LB.

—**Triangle Constr. Co.**, 480 N. Evergreen, Kankakee, Ill., CA **$1,995,800**, paving 5.9 mi., FA 14 near Crainville and in Marion, Williamson Co.

▲ **American-Marietta Co.**, East Ave. and Nance Rd., Hodgkins, Ill., LB **$237,000** (3 bidders) fabrication prestressed concrete girders for structures, Northwest Expressway over Tri-State Toll Rd., Secs. 267A-0101 F 165D BU 265 (41) Park Ridge, CHICAGO, ILL., Bd. Commrs. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 31. CD 3 27.

Lee Constr. Co., 127 N. Dearborn St., Chicago, Ill., LB **$317,000**, est. $482,000 (13 bidders) railroad grade separation St. Paul R.R. over Northwest Expressway (airport lead) Sec. 267 A-0101 F-15D BUG 265 (42) Park Ridge (Chicago, Ill.).

L. B. Strandberg & Sons Co., 134 S. LaSalle St., Chicago, Ill., LB **$210,000**, est. $271,000 (11 bidders) grade separations, Northwest Expressway (airport lead) over Des Plaines River, Sec. 267A-0202 F-15D BU 265 (40) Park Ridge, LB **$671,000**, est. $828,000 (11 bidders) grade separation O'Hare Airport leads, North Expressway over Toll Rd., 2 bridge Secs. 267A-0202-1, F15D BU 265 (39) and 267A-0202-2 F-15D BU 265 (39), Park Ridge (Chicago, Ill.).

W. E. O'Neil Constr. Co., 2751 N. Clybourn Ave., Chicago, Ill., LB **$479,000**, est. $652,000 (10 bidders) 5 grade separations, airport leads, Northwest Expressway over Tri-State Toll Rd., Sec. 267A-0101-15D BU 265 (41) Park Ridge (Chicago, Ill.).

▲ **Rock Road Constr. Co.**, 5915 N. Rogers Ave., Chicago, Ill., LB **$477,403**, est. $645,000 (9 bidders) grading, paving Congress St. Expressway, Laramie to Central Aves., Sec. 062-2C10 4 15 D BI-0-4 (22); LB **$411,000**, est. $541,000 (8 bidders) widening reconstructing 4 lanes, 17 Ave., 31 St. to Roosevelt Rd., 2 mi., Sec. 025-0324 MFT, Brookfield, CHICAGO, ILL., Bd. Commrs. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 31. CD 3 27.

Hedge's Constr. Co., 5915 N. Rogers Ave., Chicago, Ill., LB **$815,000**, est. $1,038,000 (5 bidders) reconstruct Central Rd., Arlington Heights Rd. to Northwest Highway, 4 lane, 2 conc. paving 1.8 mi., Sec. 117-1818 MFT, Arlington Heights (Chicago, Ill.).

Arcole Midwest Corp., 3225 Main St., Skokie, Ill., LB **$155,000**, est. $175,000 (4 bidders) pave Shermer Rd., Waukegan to Dundee Rds., 24 ft. c. conc., 80 mi., Sec. 106-0201 MFT Northbrook (Chicago, Ill.).

Millburn Bros., Central Rd., Mount Prospect, Ill., LB **$126,000**, est. $245,000 (8 bidders) pave 4 lane c. conc. Palatine Rd., Northwest Hy. to Rohlwing Rd., Sec. 110-080-1 MFT, Palatine (Chicago, Ill.).

J. P. Constr. Co., 1750 State St., Chicago Heights, Ill., LB **$185,000**, est. $258,000 (9 bidders) c. conc. pave Joe Orr Rd., Halsted to State Sts., 24 ft., Sec. 200-050-2 MFT, Chicago Heights (Chicago, Ill.).

▲ **John Doherty Co.**, 7229 S. State St., Chicago, Ill., LB **$1,222,450**, est. $1,835,000 (9 bidders) [illegible], South Rte. Expressway—east of Cottage Grove Ave. to 95 St., Section 066-1416 15D BI-09-1 (35), CHICAGO, ILL., Bd. Commrs. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 31. CD 3 27.

▲ **WISCONSIN and MINNESOTA**—State Hy. Comm. of Wisconsin and Comm. of Hys. of State of Minnesota, Room 622, State Office Bldg., Madison, Wis. Bids opened 3 31.

Wis.-Minn.—**Massman Constr. Co.**, 3917 Broadway, Kansas City, Mo., LB **$1,368,748** (10 bidders), Connors Point Piers, Interstate Hy. 535, Contr. 1, Proj. I-535-7 (7) 262, Superior approach piers and abutment for Structure B-16-5 (Wis.) or 9030 (Minn.), The Duluth-Superior Interstate Bridge, Interstate Hy. 535, Contr. 2, Proj. I-535-7 (7) 262, St. Louis Co., Minn., and Douglas Co., Wis.

Wis.-Minn.—**H. H. Mass Constr. Co.**, Main St., Algonquin, Ill., LB **$814,023** (4 bidders), Connors Point piers, Interstate Hy. 535, Contr. 1, Proj. I-535-7 (7) 262, LB **$711,898** (6 bidders), Superior approach piers and abutment for Structure B-16-5 (Wis.) or 9030 (Minn.), The Duluth-Superior Interstate Bridge, Interstate Hy. 535, Contr. 2, Proj. I-535-7 (7) 262, St. Louis Co., Minn., and Douglas Co., Wis. CD 3 5.

▲ **WISCONSIN**—State Hy. Comm., State Office Bldg., Madison.

C. R. Meyer & Sons Co., 208 State St., Oshkosh, Wis., CA **$1,052,082**—Structures B-40-68 and B-40-69, 0.17 mi. Northwest Expressway (State Street Structures), Contr. 1, Proj. U 03-1 7-1, Milwaukee Co. Bids Mar. 24. CD 3 27, under LB.

Durand Constr. Co., Spooner, Wis., LB **$260,000** (7 bidders) sewage treatment plant, HUDSON, WIS., City, City Hall, Hudson, Wis. Bids Mar. 20. CD 2 26.

▲† **S. J. Groves & Sons Co.**, P.O. Box 1059, Springfield, Ill., CA **$7,845,454**, aircraft refueling sys., aprons, taxi-ways and support facilities at Richard I. Bong Air Force Base, ENG-11-032-59-11, KANSASVILLE, WIS., U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Mar. 30. CD 4 1, under LB.

MICHIGAN—State Hy. Dpt., Mason Bldg., Lansing. Bids opened 3 25.

Mich.—**H. C. Shingledecker**, 2349 Orchard Lake Rd., Pontiac, Mich., LB **$181,410**, 1 mi. grading, drainage structures, surf. and 220 ft. bridge on old US 16 in Kent Lake area, Livingston and Oakland Counties. CD 3 12.

Powell & Beltz, Inc., Centralia, Ill., CA **$215,585** sewage treatment plant, lift station auxiliaries, appurtenances, VANDALIA, ILL., City, City Hall, Vandalia, Ill. Bids Mar. 17. CD 3 2.

Mich.—**Frank J. Knight**, 23849 Sherwood Court, Center Line, Mich., LB **$826,254**, grading, drainage, structures, surf., on ramps and approaches for interchange at Merriman Rd. and Detroit Industrial Expressway, Wayne Co. CD 4 13.

Mich.—**Hydon-Brand Co.**, 5338 East Division, Detroit, Mich., LB **$108,836**, installation street lighting facilities M 39 (Southfield Rd.) at Gate 12 of Ford Motor Co., Wayne Co. CD 2 11 57.

▲† **Al Johnson Constr. Co.**, 608 Foshay Tower, Minneapolis 2, Minn., and **Peter Kiewit Sons**, 1024 Omaha National Bank Bldg., Omaha, Neb. (joint venture) CA **$1,937,250**, dredging Middle Shoals Channel, St. Mary's River near Sault Ste. Marie, CIVENG 20-064-59-65, MICHIGAN and ONTARIO, U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids Mar. 12. CD 2 27.

BUILDINGS—LB & CA

▲ **L. C. Homes, Inc.**, 8016 Plainfield Rd., Cincinnati, O., Owner Builds, **$5,000,000**, 450 HOUSE DEVELOPMENT off Elmont Dr., Clermont Co., near BATAVIA, O. National Homes Corp., 401 East Ave., Lafayette, Ind., archts.; James S. Ward & Assoc., 2565 W. Galbraith, Cincinnati, O., engrs.

R. S. Ursprung Co., Hanna Bldg. Annex, Cleveland 15, O., LB **$777,477** (4 bidders) general contract JUNIOR HIGH SCHOOL, BAY VILLAGE, O., Bd. Educ., 502 Cahoon Rd., Bay Village, O. Bids Mar. 31. CD 3 4.

THIS JOB 6 MONTHS AHEAD OF SCHEDULE

Stang dewatering cuts time by 50% and reduces costs!

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Dewatering Contractor:
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▲ **D & B Builders, Inc.**, 1253 Bell St. S., Russell, O., Owner Builds, **$1,100,000**, 50 HOMES Bel-Meadows Sub-division 1 mi. south of CHAGRIN FALLS, O.

▲ **Baker & Combs, Inc.**, 1960 W. Broad St., Columbus, O., LB **$1,177,500**, est. $1,531,956, brick, concrete MARRIED STUDENTS HOUSING, at Ohio State University, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids Mar. 31. CD 5/27/57.

▲ **Jewel Builders**, 3497 E. Livingston Ave., Columbus, O., Owner Builds, **$7,000,000**, 500 air-conditioned brick HOMES, COLUMBUS, O.

▲ **Vernon C. Neal, Inc.**, 585 E. Town St., Columbus, O., Owner Builds, **$4,000,000**. (First Phase), 416 unit University Arms APARTMENTS, off Olentangy River Rd., COLUMBUS, O. CD 4/7.

Opal Properties, Inc., 3479 E. Livingston Ave., Columbus, O., Owner Builds, **$760,000**, 19 four-family APARTMENTS, Woodhill Dr. and Burr Ave., COLUMBUS, O.

▲ **J. Mack Stewart Corp.**, 1856 Northwest Blvd., Columbus, O., Owner Builds, **$2,250,000**, 84 HOMES, Ridgewood Estates Subdivision, Dublin Rd., COLUMBUS, O.

I. F. Weber Co., Commercial Bldg., Dayton, O., CA Est. **$500,000**, general contract 40,000 sq. ft. LUMBER and BUILDING SUPPLY PLANT, Dorothy Lane Rd., DAYTON, O. Lumber Mart, Inc., c/o Earl Requarth, 447 E. Monument Ave., Dayton, O.

▲ **Holmes Constr. Co.**, Wooster, O., CA Est. **$8,000,000**, WALL BOARD MANUFACTURING PLANT, LORAIN, O. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y. CD 10/5/56.

Wm. Ruple, 4908 Middledale Rd., Lyndhurst 24, O., Owner Builds, **$455,000**, 14 early American colonial HOMES, Marian Dr., LYNDHURST, O.

▲ **Samuel & Harry Meldon**, 4095 Meadowbrook, Cleveland, O., Owner Builds, **$2,500,000**, 140 brick ranch HOMES, 70-acre site, Carolyn Drive, 2½ mi. north US 20, MENTOR, O.

▲ **Red Fox Estates Co.**, 231 S. Chestnut St., Ravenna, O., Owner Builds, **$3,000,000**, 310 HOMES, Rte. 303 and Price Rd., STREETSBORO, O. CD 3/27.

▲ **R. G. Dunbar, Inc.**, 3810 Upton Ave., Toledo, O., Owner Builds, **$6,000,000**, 350-400 one story HOMES, Heather Downs Blvd. and Byrne Rd., TOLEDO, O.

Forepaugh Constr. Co., 956 Broadway, Cleveland, O., CA **$650,713** general contract Chamberlin HIGH SCHOOL addn., TWINSBURG, O. Bd. Educ., Twinsburg, O. Bids Mar. 24 awarded Mar. 26. CD 3/3.

▲ **Leo W. Schmidt Co.**, 9920 Granger Rd., Cleveland 25, O., LB **$1,939,243** (9 bidders), general contract HOME for AGED, Richmond Rd., WARRENSVILLE, O. Little Sisters of the Poor, 2507 E. 22nd St., Cleveland 15, O. Stickle & Assoc., 2422 Prospect Ave., Cleveland 15, O., archts. Bids Mar. 17. CD 3/7.

Willowgate Homes, Inc., 1931 Wrenford Rd., South Euclid 21, O., Owner Builds, **$800,000**, 44 ranch and split level HOMES, near E. 315 St. and Dudley Park, WILLOWICK, O. Samuel Popkins, 16828 Kinsman Rd., Cleveland, O., archt. Louis J. Rotman, 31715 Vine St., Wickliffe, O., engr.

M. DeBartolo Constr. Co., 2620 Market St., Youngstown, O., CA Est. **$400,000**, 1 story, partial bsmt., 60,000 sq. ft., brick, steel PROFESSIONAL BLDG., Market St. and Erskine Ave., YOUNGSTOWN, O. Andvir, Inc., c/o Dr. A. A. Detesco, 4115 Hudson, Youngstown, O.

Huber, Hunt & Nichols, Inc., P. O. Box 128, Indianapolis, Ind., CA **$465,000**, POWER PLANT addn., BLOOMINGTON, IND. Indiana University, Trustees, Bloomington, Ind. Bids Mar. 10. CD 2/3.

Thorp Constr. Co., Inc., 2520 Boonville Hy., Evansville, Ind., CA **$452,325**, general contract, 2 story, HOSPITAL addn., East side, 4 story hospital addn., West side, BRAZIL, IND. Bd. Trustees Clay Co. Hospital, Brazil, Ind. Bids Mar. 4. CD 2/10.

Edward Gray Corp., 12233 S. Ave. O, Chicago, Ill., CA **$500,000**, JUNIOR DEPARTMENT STORE, 5th and Chase Sts., GARY, IND. Mangel Stores Corp., 115 W. 18 St., New York, N. Y. Awarded Mar. 25. Davis-Brody & Wisnewski, 220 E. 23 St., New York, N. Y., archts.

Glenroy Constr. Co., 450 S. Ritter St., Indianapolis, Ind., CA **$672,600**, general contract Broad Ripple HIGH SCHOOL addn., East 63 St., INDIANAPOLIS, IND. Bd. School Comrs., 150 N. Meridian St., Indianapolis, Ind. Bids Mar. 24. CD 3/2.

Coath & Goss, Inc., 5103 W. Lake St., Chicago, Zone 44, Ill., LB **$665,490** (11 bidders) general contract 3 story, precast concrete Albert Einstein SCHOOL, 38 St. and Cottage Grove Ave., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago, Ill. Bids Mar. 30. CD 3/4.

Lindquist Constr. Co., Dixon, Ill., CA **$580,000** general contract 3 story, brick HOSPITAL addn., incl. bit. paving parking area, DIXON, ILL. Dixon P. Hospital, 403 S. 1st St., Dixon, Ill. Bids Mar. 3. CD 8/19.

▲ **Sjostrom & Sons**, 718 7 Ave., Rockford, Ill., LB **$1,626,400** (9 bidders) general contract 198,000 sq. ft. SENIOR HIGH SCHOOL, Auburn St., ROCKFORD, ILL. Bd. Educ., 201 S. Madison St., Rockford, Ill. Bids Mar. 31. CD 3/25.

O. E. Madsen & Son, Inc., 492 Sexton Bldg., Minneapolis, Minn., LB **$588,500** (7 bidders) general contract LIBRARY at State College, EAU CLAIRE, WIS. Wisconsin State Colleges Bldg. Corp., Room 27 East, State Capitol, Madison, Wis. Bids Mar. 26. CD 2/17.

Federal Constr. Co., 9028 W. Palmetto Ave., Milwaukee, Wis., Owner Builds, **$480,000**, APARTMENTS, MILWAUKEE, WIS. A. N. Charonas, 4160 N. 78 St., Milwaukee, Wis., archt.

Woerfel Corp., 5345 N. Hopkins St., Milwaukee, Wis., CA Est. **$700,000**, CHURCH, WAUWATOSA, WIS. Greek Orthodox Church, c/o Stacy, 1930 N. Prospect Ave., Milwaukee, Wis. Bids Jan. 15. CD 11/25.

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich., CA Est. **$14,500,000** 1 and 2 story, 286,000 sq. ft. OFFICE, KALAMAZOO, MICH. Upjohn Co., 301 Henrietta St., Kalamazoo, Mich.

▲ **Herlihy Mid-Continent Co.**, 8351 East U. S. 12, Comstock, Mich., CA **$2,387,830**, general contract SCHOOL, KALAMAZOO, MICH. Bd. Educ., Kalamazoo, Mich. Bids Mar. 31. CD 3/19.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† **South Dakota**—BA 5/6—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnishing powerhouse bridge cranes, near Pierre, Oahe Reservoir Proj., ENG-25-066-59-102. $500,000-$600,000. CD 9/23.

BUILDINGS—BA

Okla., Tulsa HOME FOR AGED—BA 4/21—Oklahoma Methodist Home for Aged, 4114 E. 31 St., home for aged. $400,000. Jones & Greenwood, 19 W. 10 St., archts.

Colo., Denver PLANT—BA 4/22—Interstate Bakeries Corp., 1125 12 St., 1 story, 210 x 228 ft. bakery plant, incl. 40 x 40 ft. loading dock at rear. $750,000. Linder, Wright & White, 831 14 St., archts. CD 9/9.

▲ **Mo., St. Louis** HOSPITAL—BA 4/22—Christian Hospital, 4400 N. Newstead Ave., Zone 15, 5 story, bsmnt., penthouse, 94½ x 138 ft. brick, stone, rein.-con. etc. hospital. $2,000,000. Extended date. Sy G. Schmidt & Assocs., 1819 Railway Exchange Bldg., Zone 1, archts.-engrs. CD 2/10.

▲ **Wyo., Laramie**—APARTMENTS—BA 4/23—University of Wyoming, Campus, 250 apartments, $1,689,969. CD 4/1.

▲ **Minn., Richfield (P. O. Minneapolis)**—SCHOOL—BA 4/30. Bd. Educ., Part A, 3 story, part bsmnt., 166 x 271 ft., Part B, 1 story 150 x 240 ft. Junior-Senior High School, Logan and Oliver Aves. South, $2,250,000. Plans deposit $50. Thorshov & Cerny, Inc., 400 Metropolitan Bldg., Minneapolis, archt. CD 3/5.

Mo., Oakland (St. Louis 22 P. O.)—SCHOOL—BA 4/30—St. Louis Archdiocese Bldg. Comm., 4396 Lindell Blvd., St. Louis, Zone 8, 2 story, rein.-con., brick Ursuline Academy, Monroe Ave. west of Sappington Rd. $600,000. Murphy & Mackey, 6124 Enright Ave., St. Louis, Zone 12, archts. CD 2/12.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA** State Hy. Dpt., Hy. Bldg., Capitol Grounds, St. Paul,

Minn.—**W. H. Hodgman & Sons, Inc.**, 921 North State St., Fairmont, Minn., CA **$927,561**, grav. base and plant mixed bit. surf. 19.8 mi., Renville Co.;

Minn.—**Ashbach Constr. Co.**, 1910 W. County Road C, St. Paul, Minn., CA **$1,183,810**, sand-grav. subbase grav. base, road-mixed bit. base, plant mixed bit. surf. concrete paving and bridge No. 9344. 0.98 mi. Washington and Ramsey Counties. Bids Mar. 20. CD 3/24 under LB.

▲ **MINNESOTA** State Hy. Dpt., Hy. Bldg., Capitol Grounds, St. Paul,

L. Joyce, 2201½ First Ave. South, Rochester, Minn., CA **$1,494,346**, sand-grav. sub-base, grav. base, road mixed bit. base, plant mixed bit. surf. concrete paving and Bridge No. 9505, Mower Co. Bids Mar. 20. CD 3/24, under LB.

Swanson & Northern, County Road 67, Hopkins, Minn., LB **$533,041** (6 bidders), 34,000 lin. ft. sanitary sewers, lift station revisions, water mains, etc., ST. LOUIS PARK, MINN. City, City Hall, St. Louis Park, Minn. Bids Mar. 30. CD 3/10.

M. J. McGough Co., 1954 University Ave., St. Paul, Minn., CA **$534,500**. Highland Park water reservoir, Snelling Ave. between Highland and Ford Parkways, ST. PAUL, MINN. City, City Hall, St. Paul, Minn. Bids Mar. 23. CD 3/30, under LB.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, bids opened 3/27.

Mo.—**Howard Constr. Co.**, 1504 North Osage, Sedalia, Mo., LB **$697,199** (5 bidders), graded earth, culverts, 2-24 ft. concrete pavements 1.733 mi., Buchanan Co., LB **$966,770** (12 bidders), graded earth, culverts, 24 ft. asphalt concrete pavement 7.129 mi., Oregon Co.

Mo.—**Peter Kiewit Sons Co.**, 1525 S. Glenstone, Springfield, Mo., LB **$1,315,687** (4 bidders), graded earth culverts and concrete pavement 15.295 mi., Caldwell Co.

Mo.—**C. H. Atkinson Paving Co.**, King Hill Bldg., Rm. 2-3, St. Joseph, Mo., LB **$308,064** (2 bidders) graded earth, culverts 1.955 mi., Harrison Co. CD 3/5.

† **Pine Bluff Sand & Gravel**, Pine Bluff, Ark., LB **$414,282**, est. $477,613 (8 bidders), repair dikes and revetment Missouri River, Omaha to Rulo, Upper Morgan-Rulo Bends, vicinity of Corning. CIVENG-25-066-59-86. MISSOURI. U. S. Eng., 1709 Jackson, Omaha, Neb. Bids Apr. 2. CD 3/12.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck, Bids opened 4/3.

N. D.—**Schultz & Lindsay Constr. Co.**, 320½ Broadway, Fargo, N. D., LB **$1,447,523**, c. conc. 8.764 mi. Interstate Rte. 94 from Fargo Westerly, Proj. I-IG-94-8(19)345, Cass Co., LB **$245,778**, base, b. conc.

(Continued on page 150)

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The Wolcott Avenue Bridge in Connecticut illustrates how a contractor's know-how, together with the use of Freyssinet post-tensioning methods, reduces production time and cost. Merritt-Chapman & Scott completed the 14 cast-in-place spans, each 120′ long, months ahead of schedule. *Intercontinental Equipment Co. supplied the post-tensioning stressing components.*

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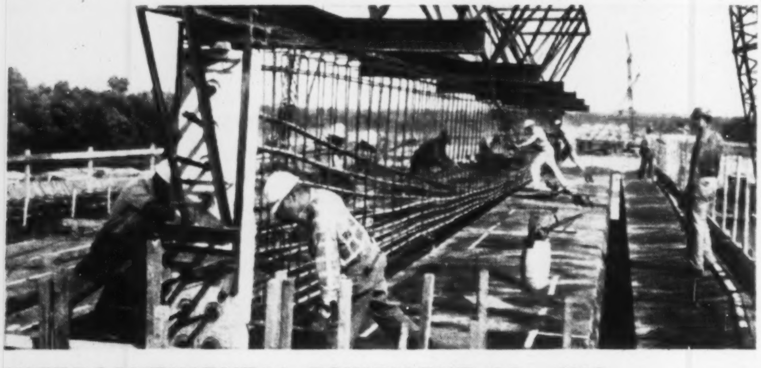

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You get **MORE** *with* **MARION**

MARION POWER SHOVEL CO. MARION, OHIO

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(Continued from page 148)

surf. 9.03 mi. County road from 3 mi. south of Hunter west, Proj. CS-359(11) Cass Co.;

N. D.—**Schultz & Lindsay Gravel Co.**, 3201½ Broadway, Fargo, N. D., and **William Collins & Sons, Inc.**, 500 2nd Ave. N, Fargo, N. D., LB $549,618, b. conc. 22.843 mi. US 52 from Drake to Harvey, Proj. F 352 (4) McHenry, Pierce, Sheridan and Wells Counties;

N. D.—**W. H. Noel Co.**, Box 1390, Jamestown, N. D., LB $782,466, base, b. conc. 8.764 mi. Interstate Rte. 94 from Fargo westerly, Proj. I-IG-94-8(19) 345, Cass Co.;

N. D.—**Art Schimkat Constr.**, Pierre, S. D., and **A. W. Schnuerle**, S. Hy. 281, Aberdeen, S. D., LB $511,636, base, bit. surf. 11.491 mi. SH 6 from near Selfridge east and south Proj. 262(10) Sioux Co.;

N. D.—**Wm. Collins & Sons, Inc.**, 500 2nd Ave. N., Fargo, N. D., LB $541,474, base, bit. surf. treatment, 15.255 mi. US 281 south of Jamestown, Proj. F 298(7) Stutsman Co.;

N. D.—**Megarry Bros.**, 337 33rd Ave. N., St. Cloud, Minn., LB $146,264, stockpiles US 81 and SH 11 southwest of Hankinson, south of Abercrombie and northeast of Gardner, Proj. SAP 1336, Richland and Cass Counties;

N. D.—**Peter Kiewit & Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb., LB $170,052, stockpiles, US 10, 52 and 281 and SH 1 and 11 near Oakes, Ellendale, Medina, Buchanan and Verona, Proj. SAP 1337, Dickey, Stutsman and LaMoure Counties;

N. D.—**Archie Campbell, Inc.**, New Rockford, N. D., LB $136,877, base, bit. surf. 6.75 mi. county road from US 2, 6.5 mi. west of Williston southwesterly Proj. CS-93(9), Williams Co. CD 3/18.

† **Dist. P. Wks. Office**, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill., rejected bids Mar. 17, stabilization runway ends and shoulders, Naval Air Station, Spec. No. 14696/59, OLATHE, KAN. $500,000-$1,000,000. Will re-advertise. CD 2/19.

† **V&N Constr. Co.**, 202 37th St., Lubbock, Tex., LB $944,132 (9 bidders) general constr. 418 units WHERRY HOUSING rehabilitation, imprv., Reese Air Force Base, Proj. N. A. Inv. No. 41-620-59-19, LUBBOCK, TEX. Procurement Office, Bldg. T-151, Reese Air Force Base, Lubbock, Tex. Bids Mar. 31. CD 2/18.

H. B. Zachry Co., Constr. Div., Box 10188, San Antonio, Tex., CA $596,978, Base Bid, participation paving Proj. "D" asphalt paving, Saltillo St. and portions 45 other streets, SAN ANTONIO, TEX. City, City Hall, San Antonio, Tex. W. F. Pickard, c/o Courthouse, San Antonio, Tex., engr. Bids Mar. 31. CD 1/26/56.

† **Holmgren & Larson**, 330 W. Costilla St., Colorado Springs, Colo., LB $754,300, barracks modifications and repairs, Francis E. Warren Air Force Base, IFB 48-608-59-48, CHEYENNE, WYO. Base Procurement Office, Bldg. 208, Francis E. Warren Air Force Base, Cheyenne, Wyo. Bids Mar. 17. CD 2/4.

▲ **NEW MEXICO**—State Hy. Comn., State Hy. Bldg., Cerrillos Rd., Santa Fe.

N. M.—**Harry Trotz Constr. Co.**, 704 Solar Rd. N.W., Albuquerque, N. M., CA $136,184, est. $152,555, Clayton-Nara-Visa vicinity, 4-59 (601), Union and Quay Counties; CA $102,056, est. $114,325, Guadalupe-Quay Tucumcari vicinity, 4-59 (602), San Miguel Co.;

N. M.—**Brown Constr. Co.**, 3525 4th St. N.W., Albuquerque, N. M., CA $1,359,484, est. $1,648,616, State College U. S. 70, I-010-2 (10), Dona Ana Co.;

N. M.—**Adams Constr. Co., Inc.**, 768 Cerrillos Rd., Santa Fe, CA $888,240, est. $982,729, Lovington-Hobbs, F-026-1 (3), Lea Co.;

N. M.—**Haake Constr. Co., Inc.**, P. O. Box 4188, Coronado Station, Santa Fe, N. M., CA $349,960, est. $410,294, Eagle Nest-Red River, S-1529 (2), Colfax Co. Grand total $2,835,924. Bids Apr. 3. CD 3/24.

† **Farnsworth & Chambers Co., Inc.**, P. O. Box 74, Houston, Tex., CA $685,860, airmen's dormitory, Cannon Air Force Base, ENG-29-005-59-72, CLOVIS, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Mar. 17. CD 4/2, under LB.

BUILDINGS—LB & CA

▲† **Ring Constr. Co.**, Metropolitan Bldg., Minneapolis, Minn., CA $3,416,000, FEDERAL OFFICE and COURT HOUSE, MINNEAPOLIS, MINN. General Services Admin., 19 and F Sts. N. W., WASH., D. C. Bids Mar. 10. CD 1/16, under LB.

D'Arcy Leck Constr. Co., 2828 Stevens Ave., Minneapolis, Minn., LB $657,000 (18 bidders), general contract, DEPARTMENT STORE, Ford Parkway between Cleveland Ave. and Finn St., ST. PAUL, MINN. Powers Department Store, Nicollet Ave. and Fifth St., Minneapolis, Minn. Bids Mar. 21. CD 3/4.

City, City Hall, Guttenberg, Iowa, rejected bids Feb. 25, 2-story, 91x133 ft., steel frame, masonry BOILER ROOM for Guttenberg Municipal Hospital, GUTTENBERG, IOWA. Over $450,000. New bids in Spring 1959. CD 1/26.

Burt Wenneker & Co., 6 Ladue Forest, Ladue 24, Mo., CA Est. over $400,000, 1 story RECREATION BLDG., incl. 280-car parking, 1575 Woodson Rd., OVERLAND (ST. LOUIS 14, P. O.), MO. Bowl-A-Rama, Inc., c/o Charles Biance, 2736 Victor St., St. Louis 4, Mo. Ralph Hohl, 6 Cedar Crest, St. Louis County 24, Mo., archt.

L. J. McNeary Constr. Co., 9715 Gravois Rd., Affton 23, Mo., Owner Builds, $647,000, 32 addnl. frame RESIDENCES, Tara No. 7 Subdivision, ST. LOUIS COUNTY, MO.

John M. Fogel Constr. Co., 1212 E. 8th, Kansas City, Mo., CA Est. $500,000, 44,000 sq. ft. OFFICE and 121 car parking, MISSION, KAN. Pyramid Life Insurance Co., 727 Minnesota, Kansas City, Kan. Herbert E. Duncan, 4049 Penn, Kansas City, Mo., archt. CD 3/16.

W. H. Wallace, 2330 Hardwick St., Dallas, Tex., CA $757,700, Base Bid, 1, 2 and 3 story, 155 unit RESORT HOTEL and swimming pool, Holiday Inn, DALLAS, TEX. Tex-Mex Corp., 700 Vaughn Bldg., Dallas, Tex. Bids Mar. 23. CD 3/4.

R. D. Lowman & Co., 1617 E. Missouri St., El Paso, Tex., CA $625,319, WAREHOUSE, SHOPS, EQUIPMENT SHEDS, LABORATORY and REPRODUCTION BLDG.; utilities, Proj. Nos. MC 24-G-5; MC 24-1-5, EL PASO, TEX. State Hy. Dpt., Dist. 24, Austin, Tex. Bids Mar. 13. CD 3/18, under LB.

Gower & Folsom, 8806 Sovereign Row, Dallas, Tex., CA $515,000, 1st unit 61,074 sq. ft. SHOPPING CENTER, FARMERS BRANCH, TEX. Farmers Branch Shopping Center, Farmers Branch, Tex. John R. Thompson, 200 W. Colorado St., Dallas, Tex., archt. CD 9/19.

Dallas East Homes Inc., 505 E. Monica St., Garland, Tex., Purchase and Hire, $409,650, 33 DWELLINGS, Monica Park area, GARLAND, TEX. CD 3/26.

Linbeck Constr. Corp., Box 13007, Houston, Tex., CA $516,900 (15 bidders), HOME FOR AGED, HOUSTON, TEX. Central Church of Christ, 4100 Montrose Blvd., Houston, Tex. Bids Mar. 10. CD 3/24, under LB.

▲ **John Robbins Bldg. Co.**, 8503 Stoneybrook St., Houston, Tex., Owner Builds, $426,175, 35 DWELLINGS; $416,900, 34 DWELLINGS; $407,250, 31 DWELLINGS, Crestmont Addn., HOUSTON, TEX. Grand total $1,250,325. I. B. Wootters, 2706 Richmond Ave., Houston, Tex., archt. CD 3/23.

Winter King & Son, Box 1449, Beaumont, Tex., CA $651,526, ELEMENTARY SCHOOL and GYMNASIUM, ORANGE, TEX. West Orange Ind. School Dist., Orange, Tex. Bids Mar. 26. CD 4/6, under LB.

Northrich Builders, 1102 Lorrie Dr., Dallas, Tex., Owner Builds, $445,000, 25 brick type DWELLINGS, RICHARDSON, TEX. CD 3/26.

▲ **Casa Blanco Lumber Co.**, 1403 Guadalupe St., San Antonio, Tex., Owner Builds, $400,000, 34 DWELLINGS; $441,600, 43 DWELLINGS; $429,500, 40 DWELLINGS, Castroville Rd., SAN ANTONIO, TEX. Grand total $1,271,100. DeVerne Kittle, 523 W. Hildebrand Ave., San Antonio, Tex. CD 2/27.

▲ **William Matera**, 1200 Basse Rd., San Antonio, Tex., CA $2,100,000, Phase 1, 200,206 sq. ft. SHOPPING CENTER, Fredericksburg Rd. and Vance-Jackson Rd.; CA $93,000, sanitary-storm sewer lines, SAN ANTONIO, TEX. Berler Properties, Northwest Regional Shopping Center, 100 Mackey St., San Antonio, Tex. Otto Ransleben, 523 W. Hildebrand Ave., San Antonio, Tex., archt. Jean, Edens, Jr., 8701 Broadway, San Antonio, Tex., and Barry F. Johnson, 8701 Broadway, San Antonio, Tex., engrs. CD 8/14.

▲ **W. B. Builders & Developers**, Littleton, Colo., CA $1,300,000, est. $1,000,000, 2 story, 120,000 sq. ft. SHOPPING CENTER, incl. parking area, LITTLETON, COLO. Jack Wagenblast, 2141 South Broadway, Littleton, Colo. CD 1/14.

FAR WEST

▲ **Calif., Santa Ana**—BA 4/22—Orange County Sanitation Distr. No. 3, Courthouse, 21,418 ft. 48- to 51-in. concrete pipe Miller-Holder trunk sewer in Cypress and Buena Park area, Contr. 3-4A. $1,470,000. CD 8/15.

▲ **Calif., Santa Ana**—BA 4/29—Orange County Sanitation Distr. No. 2, Courthouse, 25,000 ft. 30- to 42-in. pipe, South Anaheim Interceptor Sewer, Anaheim, Contr. 2-2. $2,000,000. CD 8/15.

▲ **California**—BA 5/5—Oroville-Wyandotte Irrigation Dist., Oroville, South Fork of Feather River Proj. and adjoining territory east of Oroville, Plumas, Sierra, Butte and Yuba Counties, consisting of following:

Sched. 1, furnish concrete aggregates. Plans deposit $3.

Sched. 2, Little Grass Valley Dam and Reservoir. Plans deposit $10.

Sched. 3, Sly Creek Dam and Reservoir. Plans deposit $10.

Sched. 4, Slate Creek Storage Dam and Reservoir and Ponderosa Dam and Reservoir. Plans deposit $10.

Sched. 5, South Fork Diversion Dam and Tunnel and Slate Creek Diversion Dam and Tunnel. Plans deposit $12.

Sched. 6, Woodleaf Tunnel and Lost Creek Dam Repairs. Plans deposit $12.

Sched. 7, Forbestown Diversion Dam and Tunnel. Plans deposit $12.

Sched. 8, Woodleaf Penstock, surge tank and powerhouse; Forbestown Penstock, surge tank and powerhouse; Kelly Ridge Penstock and powerhouse, misc. bldgs., service power and communication lines. Plans deposit $30.

Sched. 9, Miner's Ranch Canal and Tunnel; Miner's Ranch Dam and Reservoir; Kelly Ridge Canal and Tunnel; Bangor Irrigation Canal; and Mt. Ida Irrigation Canal. Plans deposit $15. Est. approx. $45,000,000. Plans deposit complete set all specifications and drawings (reduced size) listed above $50. Extended date. Bechtel Corp., 101 California St., San Francisco, engrs. CD 3/23.

▲ **Calif., Los Angeles**—AIRPORT IMPRVS.—BA 5/5—Los Angeles City Dpt. Airports, City Hall, site preparation terminal area, Complex 2, Phase II, Los Angeles International Airport. $7,000,000. CD 6/8/56.

BUILDINGS—BA

Calif., Ione—TREATMENT PROGRAM UNITS—BA 4/28—State Div. Architecture, 1120 N. St., Sacramento, special treatment program units, Preston School of Industry, Youth Auth. Institution, incl. two 50-bed dormitories, 18,000 sq. ft. floor area, 7,000 sq. ft. auxiliary bldg., 5,700 sq. ft. office addn. and 3,200 sq. ft. prefabricated metal horse barn. W.O. 4009-GC-11. $848,000. Plans deposit $50. CD 12/4.

▲ **Wash., Seattle**—HOSPITAL—BA 4/28—Group Health Co-operative of Puget Sound, 15th Ave. N.&E., 5 story, 89,710 sq. ft., rein.-con. hospital. $2,300,000. Young, Richardson & Carleton, Central Bldg., Zone 4, archts. CD 10/10.

▲ **Calif., Los Angeles**—SCHOOL—BA 4/30—Bd. Educ., 1425 S. San Pedro St., Dodson Junior High School, San Pedro. $2,400,000. CD 9/25/57.

HEAVY CONSTRUCTION—LB & CA

▲† **Baker & Ford Co.**, 811 17 St., Bellingham, Wash., CA $3,666,499, est. $4,828,721, Composite Bldg., Clear Air Force Station, Inv. 59-60, CLEAR, ALASKA. U. S. Eng., P. O. Box, Anchorage, Alaska. Bids Mar. 26. CD 3/31, under LB.

▲† **W. A. Smith Contg. Co.**, 1401 Fairfax Trafficway, Kansas City, Kan., LB $1,676,554, est. $2,244,845 (5 bidders) relocate Alaska Railroad, Clear Air Force Station, Inv. 59-62, CLEAR, ALASKA. U. S. Eng., P. O. Box 7002, Anchorage, Alaska. Bids Apr. 2. CD 3/12, under Public Bldgs.

▲† **Morrison Knudson Co., Inc.**, 900 W. 15th N., Salt Lake City, Utah, LB $1,659,428, Stanaker Dam, Vernal Unit, Central Utah Proj., Spec. DC 5160, UTAH. Bureau Reclamation, Dpt. Interior, Uintah County Courthouse, Vernal, Utah. Bids Apr. 1. CD 2/27.

WASHINGTON—State Hy. Comn., Olympia. Bids opened 3/31.

P. Kiewit Sons Co., P. O. Box 1777, Vancouver, Wash., LB $420,951 (23 bidders), grading, surf., constr. bit. surf. treatment and signing 1.686 mi. Primary St. Hy. 7, Blue Lake vicinity, FAP No. F-031-1(9), Grant Co. CD 3/17.

▲ **WASHINGTON**—State Hy. Comn., Olympia.

Northwest Constr. Co., 3950 6th Ave. N.W., Seattle, Wash., CA $532,051 (12 bidders) grading, surf. b. conc. paving, constr. rein.-con. slab bridge on 1.129 mi. Primary State Hy., Salmon Creek to junction with existing Primary State Hy. No. 1, Clark Co.; CA $626,006 (8 bidders) grading, surf. b. conc. and c. conc. paving, constr. 2 rein.-con. flat slab bridges and install illumination on 2.644 mi. Primary State Hy. 1, Factoria to N.E. 8th St. in Bellevue, FAP No. I-405-3 (4) 166, King Co. CD 4/3.

† **Oberg Constr. Corp.**, 19424 Plummer St., Northridge, Calif., CA $520,554, Ballona Creek Channel repair Washington Blvd. to La Salle Ave., 1.65 mi., Culver City, Los Angeles Co., Eng-04-353-59-24, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 19, awarded Mar. 31. CD 3/27, under LB.

† **Willamette Iron & Steel Co.**, 2800 Northwest Front Ave., Portland, Ore., CA $876,705, slide gates and appurtenances, Black Butte Dam Proj., Stoney Creek near Orland, Glenn Co., Spec. 2503, Eng. 04-167-59-33, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Awarded Apr. 3. CD 4/6, under LB.

▲† **M. J. Ruddy & Sons & D. Gerald Bing**, Box 1419, Modesto, Calif., CA $1,053,292, apron, utilities, runway overrun and approach lighting, Eng. 04-203-59-26, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Mar. 19. CD 4/2, under LB.

▲ **Chas. T. Brown Co., Kringlen Constr. Co., Paul Vukich**, 1955 Glenoaks Blvd., San Fernando, Calif., LB $1,757,554 (10 bidders), Proj. 39, Cahuenga and Vineland Ave. Storm Drain, rein.-con. pipe, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Apr. 3. CD 3/10.

▲ **HAWAII**—Highway Dpt., Honolulu.

Hawaiian Dredging & Constr. Co., Honolulu, Hawaii, CA $3,034,000, triple deck highway intersection at Cross-Town Lunalilo Freeway and Pali Highway, in Honolulu.

BUILDINGS—LB & CA

Lowry Constr. Co., Wenatchee, Wash., LB $497,577 (8 bidders), general contract 20,025 sq. ft., steel frame ADMINISTRATION AND CLASSROOM BLDG., 23,670 sq. ft. GYMNASIUM for high school, CASHMERE, WASH. School Dist. 122, Cashmere, Wash. Bids Mar. 31. CD 3/18.

† **Jensen-Rasmussen & Co.**, P. O. Box 89, Sunnyside, Wash., CA $934,850, BLDG. 306 addn., Hanford Works, Inv. AT-945-(1)-1440, RICHLAND, WASH. Atomic Energy Comm., Hanford Operations Office, P. O. Box 550, Richland, Wash. Bids Mar. 26. CD 3/31, under LB.

Islands Constr. Co., 2103 N. 36 St., Seattle, Wash., Day Labor, $400,000, 3 story, rein.-con. APARTMENT, SEATTLE, WASH. R. H. Peck, 1266 Mercer St., Seattle, Wash., archt. CD 4/11/55.

▲ **The Austin Co.**, 16112 Euclid St., Cleveland, O., CA Est. $1,500,000, CEMENT DISTRIBUTION TERMINAL, incl. six 129 ft. high, 30 ft. diam. bulk cement silos, bldgs., etc., VANCOUVER, WASH. Ideal Cement Co., Denver National Bank, Denver, Colo. CD 4/18/58.

Vincent Land Co., 7862 S. Western Ave., Los Angeles, Calif., Owner Builds, $579,900, 27 stucco DWELLINGS, Caddell Ave., Reva St., Balfern Ave. and Ashworth Ave., BELLFLOWER, CALIF.

Kent & Lawrence, 844 Pico Blvd., Santa Monica, Calif., Owner Builds, $670,800, 42 stucco DWELLINGS, Acre St., Londelius St., Tr. 23700, CANOGA PARK, CALIF.

▲ **O. L. Carpenter**, 8098 Imperial Ave., Lemon Grove, Calif., LB $1,154,669 (5 bidders), Hilltop JUNIOR HIGH SCHOOL, CHULA VISTA, CALIF. Sweetwater Union High School Dist., 1130 5th St., Chula Vista, Calif. Bids Apr. 2. CD 3/19.

Stanton-Reed Co., 720 S. Palm Ave., Alhambra, Calif., LB $994,000, est. $700,000 (3 bidders), Stage 2 HOSPITAL addns., COVINA, CALIF. Inter-Community Hospital, 275 W. College Ave., Covina, Calif. Bids Mar. 31. CD 3/16.

(Continued on page 152)

Selected to span the Schuylkill

Fabricated Structural Steel by INGALLS*

A new bridge to support the endless lines of heavy traffic over the Schuylkill River is now being constructed of huge steel girders fabricated by INGALLS.

These giant girders, weighing up to 144 tons each, extend 243 feet to a section with a depth at the haunch of 15 feet. A unique system of four cranes is being used to lift the huge structures into place.

Kaufman Construction Company, the bridge contractor, is using about 4000 tons of INGALLS continuous girders, cross girders, stringers and other fabricated structural steel.

Strength, precision and economy are hallmarks of INGALLS fabricated steel. Call or write for estimates on your next job.

Contractors: Kaufman Construction Company

Consulting Engineers: Gannett, Fleming, Corddry & Carpenter

Fabricated Structural Steel: The Ingalls Iron Works Company

Steel Erection: Cornell & Company

*One of many Ingalls fabricated steel girders supporting Upper University Avenue Bridge on Philadelphia's Schuylkill Expressway.

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INGALLS INDUSTRIES ARE: **The Ingalls Iron Works Company**, Sales Offices: New York, Pittsburgh, Chicago, Houston, New Orleans, Atlanta • **The Ingalls Steel Construction Company**, Sales Offices: New York, Chicago, New Orleans, Pittsburgh, Houston, Atlanta • **Birmingham Tank Company**, Sales Offices: New York, Pittsburgh, Chicago, Atlanta, New Orleans, [illegible] • **The Ingalls Shipbuilding Corporation**, Shipyards: Pascagoula, Mississippi; Decatur, Alabama. Sales Offices: New York, Chicago, [illegible], Houston, New Orleans, Atlanta

(Continued from page 150)

Able Builders, 844 Moorpark, Oakland, Calif. LB $439,789 (7 bidders) Base Bid, wood frame, stucco Garin ELEMENTARY SCHOOL, Treeview Ave. and site work, HAYWARD, CALIF. LaVista Elementary School, 27845 Western Rd., Hayward, Calif. Bids Mar. 30. CD 3/18.

D&L Homes, Inc., 15630 Crenshaw Blvd., Gardena, Calif., Owner Builds, $962,900, 75 frame, stucco DWELLINGS, Tract 2594, LA HABRA, CALIF.

▲ **Beckner Constr. Co.**, 2650 River St., South San Gabriel, Calif., LB $2,290,000 (8 bidders), La Mirada HIGH SCHOOL, LA MIRADA, CALIF. Excelsior High School Dist., 17923 S. Pioneer Blvd. Artesia, Calif. Bids Apr. 2. CD 3/13.

Walter R. Sant & Sons, 1455 W. Lincoln Ave., Anaheim, Calif., CA $507,000, 35 frame, stucco DWELLINGS, Greenworth Ave., Lisburn Pl., Fonesea Ave.–Derwin Dr., LA MIRADA, CALIF. Rosalia Co., 1455 W. Lincoln Ave., Anaheim, Calif.

Foremost Contg. & Eng. Co., 435 S. La Cienega Blvd., Los Angeles, Calif., CA $544,300, 44 DWELLINGS, Riderwood Ave., Ridley Ave., Tract 21519, LA PUENTE, CALIF. Elm Development Co., 435 S. La Cienega Blvd., Los Angeles, Calif.

Tom E. Norcross, 6053 Atlantic St., Long Beach, Calif., LB $887,000 (11 bidders), 1 story, 45,600 sq. ft. floor area, steel frame, shop type, INDUSTRIAL ARTS BLDG., Long Beach State College, W.O. 4160GC-31. LONG BEACH, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Apr. 1. CD 3/3.

Cotiner & Gumbiner, Inc., 5316 Venice Blvd., Los Angeles, Calif., CA $500,000, 4 story, steel, masonry OFFICE, 616 S. Westmoreland, LOS ANGELES, CALIF. Sam & Irving Stein & S. Van Elgart, c/o Faxon, Gruys & Saylor, archts., 8440 Melrose Ave., Los Angeles, Calif. Bids Feb. 24, awarded Mar. 30. CD 2/18, under LB.

Cal-Western Constr., Inc., 2605 32nd St., Santa Monica, Calif., LB $466,620, est. $400,000, 3 story CENTRAL ADMINISTRATION and MANAGEMENT BLDG., LOS ANGELES, CALIF. Los Angeles City Housing Auth., 1401 E. First St., Los Angeles, Calif. Bids Mar. 31. CD 3/6.

Wm. Gorham, 4146 Palmero Dr., Los Angeles, Calif., CA $420,000, 30 frame, stucco DWELLINGS, Range Rd., Medlow Ave., Marwood Dr., LOS ANGELES, CALIF. Gorham-Olivia Co., 4146 Palmero Dr., Los Angeles, Calif.

▲ **Jones Bros.**, 147 San Vincente Blvd., Beverly Hills, Calif., LB $1,033,330 (7 bidders), SYNAGOGUE, Wilshire Blvd. and Holmby Ave., LOS ANGELES, CALIF. Sinai Temple, c/o Sidney Eisenshtat, archt., 1145 Beverly Dr., Los Angeles, Calif. Bids Apr. 1. CD 3/27.

▲ **M&K Corp.**, 519 California St., San Francisco, Calif., CA $1,294,600, general constr. 93,000 sq. ft. JUVENILE UNIT at Napa State Hospital, incl. four 45-bed dormitories, school and recreational facilities, W. O. 4007GC-13, NAPA, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Mar. 24, awarded Mar. 30. CD 3/26, under LB.

▲ **Johnson Drake & Piper**, 4009 San Leandro St., Oakland, Calif., LB $1,164,300 (11 bidders) 5 story, 55,000 sq. ft. COUNTY HEALTH BLDG., OAKLAND, CALIF. Alameda County, Courthouse, Oakland, Calif. Bids Mar. 23. CD 3/2.

▲ **Ernest W. Hahn Inc.**, 219 S. Hawthorne Blvd., Hawthorne, Calif., CA $1,360,000, HOTEL, PALM SPRINGS, CALIF. Mark S. Schulman; c/o Homer A. Rissman, archt., 1011 Swarthmore Ave., Pacific Palisades, Calif. Harold Epstein, 140 S. Orlando Ave., Los Angeles, Calif., structural engr. Bids Mar. 11. CD 3/10.

Sherman Johnson, 10329 Weaver St., El Monte, Calif., LB $965,000 (9 bidders) reinforced brick, frame, stucco HANDICAPPED REHABILITATION CENTER, POMONA, CALIF. Casa Colina Convalescent Home for Crippled Children, Inc., Eucalyptus and Pipeline Aves., Chino, Calif. Eggers & Wilkman, 600 S. LaFayette Park Pl., Los Angles, Calif., archts. Bids Mar. 26. CD 3/23.

Beckner Constr. Co., 2650 River Ave., South San Gabriel, Calif., CA $706,000, INTERMEDIATE SCHOOL, Orange and Shade Lane, RIVERA, CALIF. Rivera School Dist., 8910 Slauson Ave., Rivera, Calif. Bids Jan. 30. CD 2/4, under LB.

▲ **Kisel Homes**, Box 639, Inglewood, Calif.; Owner Builds, $1,346,700, 111 frame, stucco DWELLINGS, La Seta Pl., Avenida Cuaderno, Avenida Aprenda, Ontevedra, ROLLING HILLS, CALIF.

▲† **Sun Gold, Inc., (American Pipe & Constr. Co. & L. E. Dixon Co.)** 3631 10th St., Riverside, Calif. CA $14,467,801, 947 units Capehart HOUSING, SAN DIEGO, CALIF. Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Mar. 24. CD 3/26, under LB.

Trepte Constr. Co., Inc., 1402 Murray Canyon Rd., San Diego, Calif., CA $845,000, 3 story, 37,245 sq. ft. floor area EDUCATION BLDG. addn. and 2 story 8,436 sq. ft. floor area HEALTH SERVICE BLDG. addn., San Diego State College, W. O. 4160-GC-34 and 4160GC-36, SAN DIEGO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Mar. 25, awarded Apr. 1. CD 4/1, under LB.

▲ **Steed Bros. Constr. Co.**, Box 350, Alhambra, Calif. LB $4,275,600 (5 bidders), Holy Cross HOSPITAL, SAN FERNANDO, CALIF. Sisters of the Holy Cross, c/o Verge & Clatworthy, archts., 4342 Eagerock Blvd., Los Angeles, Calif. Bids Mar. 26. CD 3/23.

▲ **Louis C. Dunn**, Monadnock Bldg., San Francisco, Calif., CA $2,245,600, CLASSROOM BLDG. and ART CENTER at City College, SAN FRANCISCO, CALIF. City and San Francisco Co., 135 Van Ness Ave., San Francisco, Calif. Bids Mar. 25. CD 3/2.

CANADA

BUILDINGS—BA

B. C., Comox—DWELLINGS—BA 4/21—Central Mortgage & Housing Corp., 2286 W. 12th, Vancouver, 100 frame stucco dwellings. $900,000. Plans deposit $100. C. L. Tye, 2286 W. 12th Ave., engr.

HEAVY CONSTRUCTION—LB & CA

▲ **Mannix Co. Ltd.**, 737 8th Ave. SW, Calgary, Alta., CA $15,700,000 Contr. No. 1-122 mi. 30 in. Trunk Lines main line extens. from Princess to Torrington, ALBERTA. Alberta Gas Trunk Line Co., Ltd., 320 9th Ave. W., Calgary, Alta. Bids Mar. 31, awarded Apr. 2. CD 3/5.

Marine Pipeline & Dredging Ltd., 640 Hastings St., Vancouver, B. C., CA $4,300,000, Contr. No. 2, two 16 in. laterals, one 46 mi. length from Torrington junction to Nevis area, one 33 mi. in length from Torrington junction to Carstairs area, 1,000 ft. submerged crossing under Red Deer River at Nevis (Alberta).

▲ **Crown Paving Co. Ltd.**, 11730, 104th Ave., Edmonton, Alta., CA $667,698, 1959 street paving program, Contract No. 166, EDMONTON, ALTA. City of Edmonton, Civic Block, Edmonton, Alta. Awarded Apr. 2. CD 4/3, under LB.

O. K. Constr. Ltd., 8635 Stadium St., Edmonton, Alta., CA $1,274,994, city's 1959 program asphalt surf. grav. roadways in city, Contr. No. 164A, being combined contract for Contrs. No. 164 and No. 165 (Edmonton, Alta.).

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., bids opened 3/26.

P. F. Law Constr. Co. Ltd., 500 Beatty St., Vancouver, B. C., LB $1,055,310 (8 bidders), Sheep Lake section of Southern Trans-Provincial Hy. in Rossland-Trail Electoral Dist. CD 3/12.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto.

Matthews Concrete Ltd., 306 Princess Ave., London, Ont., CA $711,176, granular base, hot mix paving Hys. 3 and 4, and three bridges, Kettle Creek, Dodd's Creek (east) and Dodd's Creek (west) Contr. 58-650, St. Thomas. Awarded Mar. 31. CD 4/2, under LB.

BUILDINGS—LB & CA

H. J. McFarland Constr. Co., Ltd., Talbot St., Picton, Ont., CA Est. $830,000 (11 bidders) 2 story, 300x60 ft. COLLEGIATE INSTITUTE and 140x180 ft. GYMNASIUM, BROCKVILLE, ONT. Brockville Bd. Educ., P.O. Box 126, Brockville, Ont. C. D. Carruthers &

(Continued on page 156)

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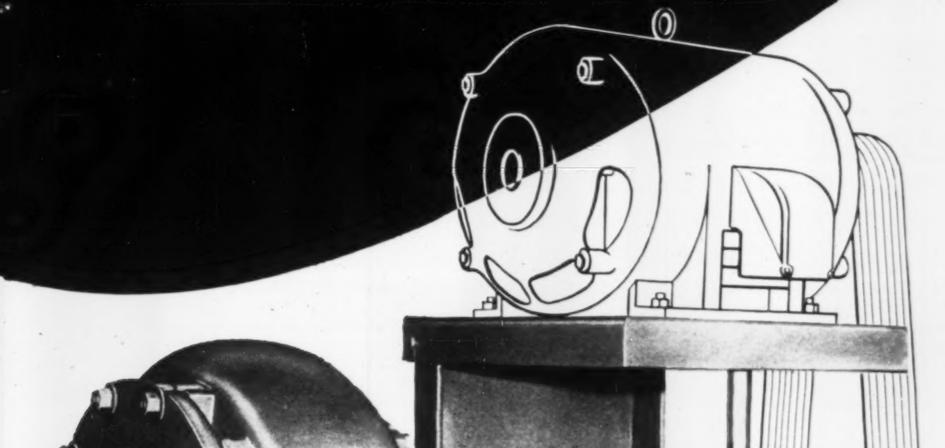

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MAYOR *Walter Reynolds, Providence, R. I. says—* "An efficient water system ranks high among the many advantages Providence offers industry. Since 1935, Transite Pipe has ably served in the continuing job of keeping our water system more than capable of meeting future needs. In this way our water system contributes not only to the health and convenience of our citizens, but also to the encouragement of industrial and economic growth in our city."

ENGINEER *Philip J. Holten, Jr., Chief Engineer Water Supply Board, Providence, R. I. says—* "Transite's installation savings have helped us absorb recent increases in labor and material costs . . . Our records show that labor and material costs have increased 100%, since 1946. Yet, in this same period of time, our installation costs have increased only 21%. The ease of handling and speed with which contractors can lay Transite Pipe enable us to take full advantage of modern equipment and methods. In this way, Transite has played a prominent part in helping us offset increased costs."

CONTRACTOR *C. J. Fanning, Pres. Fanning & Doorley Construction Co., Providence, R. I. says—* "You soon see why Transite Pressure Pipe saves time and labor when you're working through old, unmarked utility and service lines. These unforeseen obstacles can cause costly slowdowns, but they present fewer problems with Transite. Its flexibility, easy handling and speed of assembly enable our men to work fast even under the most difficult working conditions. And by the same token—your crews really move along when conditions are favorable."

CONTRACTOR *Frederick J. Gallagher, F. J. Gallagher Trenching Co., Tucson, Arizona says—* "By using Transite Pressure Pipe, we completed this 70,000-ft. water system contract several weeks faster than we had estimated. Transite's ease of assembly keeps our time and labor costs low. We excavate, install the pipe, and button up the trench fast. This speed is especially advantageous when we encounter cross service lines or are faced with bad weather. And always important, it means less annoyance to our own townspeople and the local merchants."

MAYOR *James L. Gardner, Wichita, Kansas says—* "Every year—we actively go after new business . . . seek new firms to locate in Wichita to create job and business opportunities for our citizens. These new firms need water—and never fail to ask about our water system . . . which is one of the most efficient systems anywhere in the world. Part of its efficiency is made possible by Johns-Manville Transite Pipe which we have been using for many years."

ENGINEER *Leigh O. Gardner, Yost and Gardner, Engineers, Phoenix, Arizona says—* "Transite has many advantages contributing to its economy. Its light weight, handleability and easy-to-join Ring-Tite Coupling keep our clients' final costs low. We find a continuing economy of operation throughout its long life. We have excavated lengths of Transite after 20 years of service and have found no sign of tuberculation . . . the smooth inside walls proving it still has low coefficient of friction and therefore highest carrying capacity."

(Continued from page 152)

Wallace Consultants Ltd., 92 Yorkville Ave., Toronto, Ont., engrs. Bids Mar. 12, awarded Mar. 30. CD 2 17

Gilvesy Constr. Co., Tillsonburg, Ont., CA general constr. 16 unit HIGH SCHOOL with cafeteria and gymnasium, TILLSONBURG, ONT. Total $485,000. District High School Bd., Tillsonburg, Ont. Bids Mar. 31, awarded Apr. 1. CD 3 12

Standard Steel Co., Welland, Ont., CA steel for high school (Tillsonburg, Ont.).

Carolyn Court Apartments, 366 Adelaide St. E., Toronto, Ont. Owner Builds, $900,000, two 6 story, 66 suites each brick, block APARTMENTS, Lawrence Ave. E. near Don Mills Rd., TORONTO, ONT. Harry B. Kohl, 1407 Yonge St., Toronto, Ont., archt. Reicher, Bradstock & Assocs., Ltd., 612 Sherbourne St., Toronto, Ont., engrs.

▲ **Hotel Corp. of America**, Somerset Hotel, Boston, Mass. Owner Builds $2,000,000, 200-room motor hotel, off Metropolitan Blvd., DORVAL, QUE. CD 9-12

P. W. Graham & Sons Ltd., 701 Ominica West, Moose Jaw, Sask. CA $765,456, FEDERAL BLDG., MOOSE JAW, SASK. Dpt. Pub. Wks., Hunter Bldg., Ottawa, Ont. Awarded Mar. 27. CD 3 3, under LB

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **Hawaiian Dredging & Constr. Co., Ltd. and Pomeroy & Coster**, Honolulu, Hawaii, CA $4,176,000, 220 unit Capehart HOUSING, GUAM. Commander Naval Forces Marianas, 14 Naval Dist., Navy 128, San Francisco, Calif. U. S. A. Bids Mar. 16. CD 3/26, under LB

PROPOSED PROJECTS

WATER SUPPLY

Ill., Park Ridge—City, City Hall, water pumping station, reservoir and distr. mains, Northwest Hy. $500,000. Consoer Townsend & Assocs., 360 E. Ohio St., Chicago, consult. engrs. CD 3 12

▲ **Tex., Odessa**—City, City Hall, water lines $760,000; WW sys. rehabilitation $115,000; water supply $200,000, water storage $125,000. Kenneth E. Esmond & Assocs., 419 W. 5th St., consult. engrs. CD 1 4

▲ **Ont., Toronto**—Municipality of Metropolitan Toronto, 67 Adelaide St. E., 48 in. water main John St. Pumping Station to Spadina Ave. Reservoir, $1,070,000. James F. MacLaren Assocs., 321 Bloor St. E., consult. engrs. CD 9 26 57.

SEWERS, WASTE DISPOSAL

▲ **Ala., Prichard**—City, City Hall, sanitary sewer expansion, $3,050,885. Mayton Engineering Corp., Fort Hurtel St., Mobile, consult. engrs. CD 2 5

▲ **Conn., Plainville**—Town, Town Hall, 22 mi. sewers, 4 pumping stations, sewers in Farmington Ave., Cooke St., Mountainview, Shuttle Meadow, West Main St. $1,837,000. Bids in 1959. CD 9 18 56

Ga., Lavonia—City, City Hall, water treatment plant, lines, $300,000. Zimmerman, Evans & Leopold, 525 Telfair St., Augusta, consult. engrs.

N. J., Laurelton—Brick Twp. Council, referendum in November, 1959, sewerage and water sys., $600,000. Albert C. Jones Assocs., 224 High St., Mount Holly, engrs. for prelim. surveys.

N. Y., New City—Town of Clarkstown, 40 Maple Ave., sewage treatment plant and sewerage, Clarkstown, $512,270.

▲ **N. C., Mt. Airy**—City, City Hall, voted bonds Mar. 21, sewage treatment plant, $1,600,000. J. N. Pease & Co., Inc., 119 E. 5th St., Charlotte, consult. engrs. CD 2 25

▲ **N. C., Thomasville**—City, City Hall, 2 sewage treatment plants, outfall sewers, $1,000,000. Wm. C. Olsen & Assocs., 5 Exchange Pl., Raleigh, consult. engrs.

O., Shaker Heights—City, City Hall, 3400 Lee Rd., Cleveland, Zone 20, two 100-ton or two 150-ton incinerator units, $600,000-$900,000. Adache Assocs., Inc., Hollenden Hotel, Cleveland, Zone 14, consult. engr.

BRIDGES

▲ **N. J., Palmyra**—Burlington Co. Bridge Comm., overpass and bridge, altering intersection, Rte. 73 and Broad St. $1,225,000. Bids soon. D. B. Steinman, 117 Liberty St., New York, N. Y., engr.

▲ **PENNSYLVANIA**—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg.

Montgomery Co.—bridge over Schuylkill River between Norristown and Bridgeport, $3,000,000. W. R. Froehlich, c/o owner, ch. engr.

QUEBEC—Dpt. P. Wks., Parliament Bldgs., Quebec City.

Lac St. Jean—bridge over Metabetchouan River, $200,000.

STREETS AND ROADS

▲ **ALABAMA**—State Hy. Dpt., Montgomery.

Lauderdale Co.—section Alabama-Tenn. Scenic Hy., Waterloo to Pickwick Landing Dam, $2,400,000.

ALABAMA—State Hy. Dpt., Montgomery.

Madison Co.—4-lane Governors Drive from Memorial Parkway to Clinton Ave., $750,000. To go about 1959.

▲ **Ala., Mobile**—Mobile Co. Bd. Revenue, Courthouse, $3,900,000 bond election Apr. 28, 100 mi. roads and 37 mi. resurf., $5,521,110. CD 10 29 57

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield.

Lake Co.—Sheridan Rd. Bypass Hy., 13 mi., Great Lakes, Ill. to Wisconsin State line, channelizations, overpasses and interchanges, Rte. 42, Waukegan. $13,510,000 (no appropriation). H. W. Lochner & Co., 20 N. Wacker Dr., Chicago 6, consult. engrs.

Ill., Calumet City—City, City Hall, bond election Apr. 21, reconstr. and resurf. various streets, $650,000. Consoer Townsend & Assocs., 360 E. Grand Ave., Chicago, consult. engrs. CD 3 25

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany.

Niagara Co.—6½ mi. Niagara Expressway from Buffalo Ave. at 64th St., Niagara Falls, northward to proposed new bridge over Niagara River, Lewiston, FAI Proj. $6,000,000.

Ulster Co.—reconstr. 4.4 mi. Rte. 28 from ½ mi. east Rte. 42 intersection, Shandaken southeastward to ½ mi. west Rte. 214 intersection, Phoenicia, FAI Proj., $1,000,000.

Wayne and Cayuga Counties—reconstr. 21 mi. Rte. 104 from 1 mi. west Sodus eastward to 1½ mi. east of Red Creek, FAI Proj., $6,000,000.

▲ **PENNSYLVANIA**—State Hys. Dpt., 506 North Office Bldg., Harrisburg.

Dauphin Co.—Penn-Harris Interchange at juncture U. S. 322-422 and 230 Bypass (Interstate); Swatara Twp. $1,600,000. Modjeski & Masters, 6 and Forster Sts., Harrisburg, consult. engrs.

2.62 mi. divided hy. (interstate) as relocated U. S. Rte. 230 Bypass, Swatara Twp., $2,800,000.

Perry Co.—limited access hy. about 10 mi. 4 lane divided roadway between Enola and Duncannon, $8,000,000.

York and Adams Counties—controlled access hy., four lanes, divided, 8.089 mi. between Dillsburg and York Springs, U. S. Rte. 15, $3,300,000. W. R. Froehlich, c/o owner, act. ch. engr.

AIRPORTS

▲ **Ill., Chicago**—AIRPORT IMPROVEMENTS—Dpt. Purchases, City Hall, Zone 2, heating and air-conditioning plant, $4,530,000.

water reservoir storage facility, $711,000. Bids on all foregoing about Oct. 8.

paving apron for split finger B, $942,000.

taxiway to hangar area, $1,492,000.

paving balance of road in hangar area, $372,000.

earthwork, relocation of ditch at 14R-32L, $250,000. Bids on all foregoing about May 8.

paving adjacent section, Outer Circular taxiway, $1,000,000.

paving exten. Runway 14R-32L, $2,000,000 (not included in revenue bond issue). Bids on all foregoing about May 25.

bulk storage tanks, $400,000.

water main to hangars, $596,000.

sanitary sewer to hangars, $605,000. Bids on all foregoing about June 8.

grading, paving bulk storage area, $1,900,000. Bids about July 24 (above work at Chicago-O'Hare International Airport, Park Ridge). Naess & Murphy, 80 E. Jackson Blvd., Zone 4, consult. engr. CD 3 6

Ill., Chicago—TERMINAL GATE BLDG.—Dpt. Purchases, City Hall, Zone 2, 1 story, concrete block terminal gate bldg. addn., United Airlines Bldg., O'Hare International Airport, Park Ridge, $600,000. Naess & Murphy, 80 E. Jackson Blvd., Zone 4, consult. engrs.

▲† **Mich., Kinross**—BOMARC MISSILE FACILITIES—U. S. Eng., 1101 Washington Blvd., Detroit, Zone 26, bomarc missile facilities, Kinross Air Force Base, $7,000,000 (funds appropriated). CD 3/12

AMERICANS ABROAD

▲ **Japan**—PLANT—Sumitomo Metals Industries Ltd., Osaka, steel plant addns., $80,000,000. Kaiser Engineers & Constructors, Inc., 1924 Broadway, Oakland 12, Calif., U. S. A., consult. engrs.

PUBLIC BUILDINGS

▲ **Ala., Andalusia**—HOUSING—Andalusia Housing Auth., plans by Pennington & Mills, Title Guarantee Bldg., Birmingham, 120 low rent housing units, $1,000,000. Bids soon. CD 2 2 57

Ala., Birmingham—SCHOOL—City Bd. Educ., City Hall, plans by Charles H. McCauley, Jackson Bldg., Eastern High School, $500,000. CD 12 26 56.

Ala., Cordova—HOUSING—Cordova Housing Auth., plans by Northington, Smith & Kranert, 1949 Florence Blvd., Florence, 40 low rent housing units, $592,000. CD 10 30

▲ **Ala., Mobile**—AUDITORIUM—City, City Hall, plans by Fred Clarke, First National Bank Bldg., renovation Fort Whiting Auditorium, $1,000,000. CD 7 16

▲ **Ala., Mobile**—HOUSING—Mobile Housing Auth. Bd., plans by Haley, Ligon, Johnstone, Annex 1, National Bank Bldg., 1,000 housing units, $23,000,000. Palmer & Baker, 2060 Government St., consult. engrs. CD 8 13 58

Calif., Auburn—SCHOOL—Auburn Union Elementary School Dist., P. O. Box 591, bond election May 19, Rock Creek Elementary School and Alta Vista Elementary School addns., $550,000. James L. Keefe, 1240 High St., Room 6, Shepherd Sq. Bldg., archt.

Calif., Hemet—SCHOOL—Hemet Valley Union School Dist., voted $825,000 bonds Mar. 17, Junior High School and school addns. CD 3/5.

▲ **Calif., Sacramento**—SCHOOL—Sacramento City Unif. School Dist., 1619 N. St., plans by Herbert Goodpastor and Rickey & Brooks, 1812 J. St., Sacramento, Will C. Wood Junior High School, Lemon Hill Ave. between Ortega and 65th Sts., $1,500,000. CD 2 18 55.

▲ **Calif., San Francisco**—HOUSING—San Francisco Housing Auth., 440 Turk St., plans by John S. Bolles, 14 Gold St., 12 story, Chinatown Housing, parking area and playground, Pacific Ave. near Powell St. $3,200,000. CD 8 24 56

▲ **Conn., New Britain**—SCHOOL—Bd. Educ., 27 Hillside Place, renovate E. C. Goodwin Technical School into High School, $1,000,000.

▲ **Conn., New Haven**—CENTER—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Henry F. Ludorf, 95 Elm St., Hartford, Woodruff Center, 1418 Chapel St. $3,200,000. Hubbard, Lawless & Blakeley, 110 Whitney Ave., engrs. CD 7 10 56

▲ **Conn., New Haven**—DORMITORY—State P. Wks. Comm., State Office Bldg., 165 Capitol Ave., Hartford, plans by Henry F. Ludorf, 95 Elm St., Hartford, 3 story, 432-bed dormitory for aged, Orchard St. $2,500,000. CD 11 30 53

▲ **Ga., Milledgeville**—HOSPITAL—State Welfare Dpt., State Office Bldg., Atlanta, surgery bldg., State Hospital, $2,000,000.

Ill., Fairview—SCHOOL—Spoon River Valley Community School Dist. 4, Fairview, Junior-Senior High School, $750,000.

Ill., Marion—NURSING HOME—Bd. Supervs. Williamson Co., Court House, 100-bed county nursing home, $900,000.

Ill., Moline—LIBRARY—City, City Council, $750,000 bond election Apr. 21, public library.

Ill., Morton Grove—COMMUNITY CENTER, etc.—Village, Village Hall, bond election Apr. 21, Community Center and swimming pool, $850,000.

Ind., Columbus—SCHOOL—School City of Columbus, 603 Pearl St., plans by John Carl Warnecke & Assoc., 111 New Montgomery St., San Francisco, Calif., masonry, structural steel elementary school, $500,000. CD 6 20 56

Kan., Wellington—SCHOOL—Wellington P. Schools Bd. Educ., plans by Forsblom & Parks, 101 N. Clifton St., Wichita, 1 story, rein.-con., brick, etc., Senior High School, North A St., north of 9th, $650,000. Bids late summer 1959. CD 3 16

Me., South Berwick—SCHOOL—Town School Planning Comm., plans by Alonzo J. Harriman Inc., 292 Court St., Auburn, high school, $500,000. Constr. 1959

Mass., Bedford—SCHOOL—Town, Supt. Schools, plans by Clinch, Crimp, Brown & Fisher, 177 State St., Boston, high school addn., alterations, $730,000. Cleverdon, Varney & Pike, 120 Tremont St., Boston, Mass., structural engrs. Constr. 1959. CD 1 22

▲ **Mass., Danvers**—SCHOOL—Town, Pickering St., plans by Rich & Tucker Assoc., 45 Newbury St., Boston, high school, $2,200,100. CD 11 7

Mo., Dexter—GYMNASIUM—Bd. Educ., voted $780,000 bonds Mar. 24, school gymnasium. Wm. B. Ittner Inc., 911 Locust St., St. Louis, Zone 1, archts.

▲ **N. J., Mount Holly**—SCHOOL—Bd. Educ., plans by Micklewright & Mountford, 90 E. Stuyvesant St., Trenton, Junior High School, $1,448,000.

▲ **N. Y., New City**—SCHOOLS—Central School Dist., voted bonds, elementary school, Little Tor and New Hempstead Rds., and addns. to four other schools, $2,370,000. Perkins & Will, 55 Church, White Plains, archts. Bids May-June. CD 3 24

▲ **N. C., Morehead**—HOSPITAL—City, City Hall, hospital, $1,250,000.

O., Akron—DORMITORY—University of Akron, 302 E. Buchtel St., plans by Tuchman & Canute, United Bldg., men's dormitory, $400,000. Bids this summer.

O., Champion—SCHOOL—Bd. Educ., bond election May 5, school, $525,000. CD 11 10

▲ **O., Columbus**—SCHOOLS—South-Western Bd. Educ., 1390 Harrisburg Pike, bond election July 7, schools, $1,500,000.

O., Warren—SCHOOL—Warren Twp. Bd. Educ., defeated bonds Mar. 24, Junior High School, $775,000. A. F. Sidells, Warren, O., archt. CD 2 10

Pa., Butler—SCHOOL—Center Twp. School Dist., 118 Shanor St., Butler, grade school addn., Center Twp. $890,400.

▲ **Pa., Espy**—SCHOOL—Central Columbia County Jt. School Dist., Espy, high school, $2,500,000.

Pa., Franklin—SCHOOL—Valley Grove Jt. School Dist., Franklin, high school alterations, Rocky Grove (P. O. Franklin), $675,000.

▲ **Pa., Imperial**—SCHOOL—West Allegheny Jt. School Dist., Imperial, plans by Celli-Flynn, 335 Shaw Ave., McKeesport, high school, $2,000,000. CD 3 24

▲ **Pa., Johnsonburg**—SCHOOL—Johnsonburg Area Jt. School Dist., secondary school, $1,500,000.

Pa., Ligonier—SCHOOL—Ligonier Valley Jt. School Dist., high school addn., $600,000.

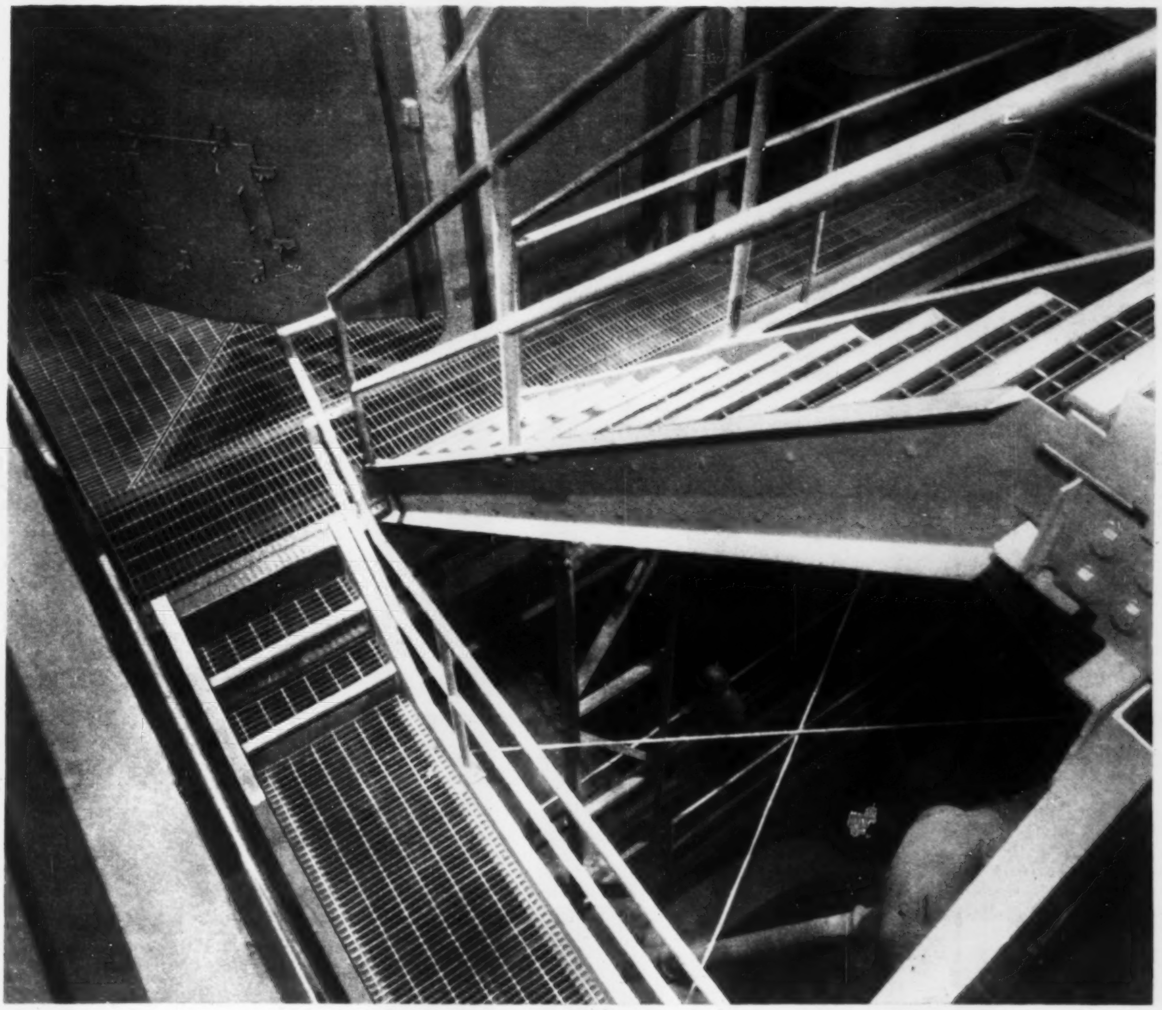
Pa., New Bethlehem—SCHOOL—Redbank Valley Jt. School Dist., New Bethlehem, elementary school, $504,000.

Pa., Rimersburg—SCHOOL—[illegible] Jt. School Dist., Rimersburg, elementary school, $571,200.

▲ **Pa., Smiths Ferry**—SCHOOL—Western Beaver County Jt. School Dist., Smiths Ferry, high school, $1,300,000.

▲ **R. I., Warwick**—SCHOOL—City, School Bldg. Comm., City Hall, high school, $2,360,000. Constr. 1959-1960.

(Continued on page 158)



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(Continued from page 156)

S. C., Greenville—SCHOOL—Greenville County Bd. Educ., Courthouse, Wade Hampton Blvd. High School. $600,000.

▲ **S. C., Rock Hill**—HOSPITAL—York County, Rock Hill, bond election Apr. 28, hospital. $1,000,000.

▲† **Tenn., Oak Ridge**—PILOT PLANT—Atomic Energy Comn., P. O. Box E, Oak Ridge, plans by Vitro Corp. of America, archts.-engrs., 261 Madison Ave., New York, N. Y., pilot plant at Oak Ridge National Laboratory (ORNL) for chemically reprocessing radioactive nuclear power plant, fuels, will combine 3 existing chemical pilot plants with new facilities, consisting of central structure to house operating and administrative areas; a process cell block and sampling gallery; a storage canal and unloading pit, and demineralizer and decontamination pits, also involves modification existing facilities. $3,500,000. Constr. late 1959. CD 9/12.

Tex., Arlington—SCHOOL—Arlington Ind. School Dist., plans by Preston M. Geren & Son, 1607 Fort Worth National Bldg., Fort Worth, 1 story, masonry Junior High School. $500,000. CD 9/8.

▲ **Tex., El Paso**—HOSPITAL—El Paso County Hospital Dist., plans by Garland & Hilles, Banner Bldg., county hospital. $5,500,000. CD 3/19.

▲ **Tex., Houston**—SCHOOLS—Houston Ind. School Dist., 1300 Capitol St., $32,000,000 bond election May 16, schools.

Tex., Sanderson—SCHOOL—Terrell Co. School Dist., Sanderson, school. $750,000.

▲ **Utah, Richfield**—SCHOOL—Sevier Bd. Educ., 188 Center St., voted bonds Mar. 25, elementary school, Salina, and high school for Richfield. $1,300,000. Paul K. Evans, 515 E. Broadway, Salt Lake City, archts. CD 3/19.

▲ **Utah, Salt Lake City**—SCHOOLS—Granite School Dist., 3212 S. State St., bond election Apr. 28, schools. $6,300,000. CD 4/21/58.

▲ **Wash., East Wenatchee**—SCHOOL—Eastmont School Dist. 206, bond election May 12, Junior High School. $1,000,000. CD 3/6.

Wash., Seattle—SCHOOL—School Dist. No. 1, 815 4th Ave. N., plans by T. Damm, 516 James St., gymnasium addn., remodeling, West Seattle High School. $600,000.

▲ **Wash., Spokane**—SCHOOLS—School Dist. No. 81, W503 4th St., voted $7,215,000 bonds Mar. 24, South Side High School, $3,000,000; Junior High School, Francis and A St. $1,300,000. CD 11/12.

Wash., Tacoma—SCHOOL—Tacoma School Dist., S. 8th St. and Tacoma Ave., Bryant Grade School. $550,000. Constr. late 1960.

Wis., Madison—ENZYME LABORATORY—University of Wisconsin, plans by Siberz, Purcell & Cuthbert, 1920 Monroe St., 2 story, 80 x 100 ft. Enzyme Laboratory addn. $565,000. Bids soon. CD 1/30.

▲ **Wis., Madison**—FINE ARTS—University of Wisconsin, plans by Eschweiler & Eschweiler, 720 E. Mason St., Zone 2, Fine Arts Bldg. $1,058,800. CD 9/20/57.

Wyo., Newcastle—SCHOOL—Newcastle School Dist., voted $650,000 bonds Mar. 24, school. CD 3/3.

▲ **Alta., Edmonton**—GARAGE—City, City Hall, central garage. $1,500,000. Bids in July.

▲ **Man., Winnipeg**—HOSPITAL—Children's Hospital of Winnipeg, Winnipeg, plans by Moody & Moore, 295 Broadway Ave., nurses residence addn., 2 hospital wings, internes quarters. $2,500,000. CD 5/27/[illegible]

COMMERCIAL BUILDINGS

▲ **Calif., Hayward**—APARTMENT HOUSE, etc.—Harry Kroll, c/o F. M. Cranston, archt., 7716 Castro Valley Blvd., Castro Valley, apartment house, swimming pool at Lewellyn Blvd. near Washington Ave., near here. $1,000,000.

▲ **Calif., Sacramento**—OFFICE—State Employees Building Corp., 1325 K St., 4 story, 80x160 ft. office bldg. with penthouse. $1,000,000. West American Engineering Co., 109 Stevenson St., San Francisco, archt.-engr. Bids in early summer.

▲ **Calif., San Francisco**—APARTMENTS—Charles J. Harney, 575 Berry St., plans by H. C. Baumann, 251 Kearny St., two 12 story rein.-con. apartments, inc. 2 floors below ground for parking. $3,000,000.

Calif., Sausalito—RESTAURANT—J. E. McAtteer & Wm. E. McDonnell, c/o Hartzka & Knowles, archts., 32 Fremont St., San Francisco, waterfront restaurant, cocktail lounge, docking facilities, gift shop at Sandspit off Bridgeway. $500,000.

Conn., Danbury—BOWLING ALLEY—Jack L. Thompson, Clapboard Ridge, 50 lane bowling alley, automatic pinsetters, 45,000 sq. ft. banquet room, Sugar Hollow Rd. $800,000.

Conn., Groton—BOWLING CENTER—Patterson Corp., Poquonnock Rd., 1 story, 131x231 ft., slab, concrete block bowling center, Poquonnock Rd. $500,000. Fair Lanes Inc., Baltimore, Md., lessee.

Conn., Hamden—CHURCH—Hamden Plains Methodist Church, 25 Church St., plans by Painchaud & Ryder, Hull Bldg., Madison, church alterations Dixwell Ave. $600,000.

▲ **Conn., New Haven**—ACADEMIC—Albertus Magnus College, 700 Prospect St., plans by Polak & Sullivan, 1397 Chapel St., academic bldg. $450,000; 5 story dormitory, fire resistant constr. $900,000. Arthur G. Beaulieu Assocs., 2348 Whitney Ave., Hamden, consult. engrs. CD 3/27.

▲ **Conn., Waterbury**—MOTOR HOTEL—Walbert Corp., c/o Herbert L. Cohen, atty., 955 Main St., Bridgeport, 2 story, brick fireproof motor hotel, West Main St. $1,000,000.

▲ **Conn., Wethersfield**—APARTMENTS—Myron Griswold, 440 Church St., plans by Irving W. Rutherford, 49 Garden St., Hartford, 160 unit garden apartments, Folly Brook Blvd. $1,000,000. CD 3/25.

▲ **Fla., Dunedin**—RESIDENCES—Del Oro Shores, Inc., 659 Douglas St., 200 residences. $2,500,000. Peterson & Assocs., Cleveland St., Clearwater, consult. engrs.

▲ **Fla., Tampa**—OFFICE—Marine Bank & Trust Co., Madison and Franklin, plans by Eliot C. F. Fletcher, 404 Marion St., 16 story office. $3,000,000.

▲ **Ga., Atlanta**—BOWLING ALLEY—[illegible], 444 Claire Dr. S. W., bowling alley, Stewart Ave. Over $1,000,000.

▲ **Ga., Fort Oglethorpe**—HOSPITAL—[illegible] Memorial Tri-County Hospital, plans by Abreu & Robeson, Inc., Walton St. N. W., Atlanta, second phase 83-bed hospital expansion. $1,500,000. CD 1/23.

Ill., Lisle—DORMITORY—St. Procopius College, [illegible] Ave., Lisle, dormitory. $800,000.

▲ **Ill., Rockford**—HOSPITAL—Swedish-American Hospital, 1316 Charles St., plans by Gilbert A. Johnson & Assocs., American National Bank Bldg., 10 story hospital addn., Charles St. $4,000,000. CD 3/26.

▲ **Minn., Edina (P.O. Minneapolis)**—BOWLING ALLEY—Southdale Realty Co., 6609 West 66th St., plans by Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, 32-lane bowling center [illegible] south of 69th St. between [illegible] Ave. $1,000,000. CD 12/[illegible]

▲ **Minn., New Brighton**—SHOPPING CENTER—[illegible] Melberg & Assoc., 3717 Abbott Ave. North, Minneapolis, plans by [illegible] Thorsen, 121 South Eighth St., Minneapolis, [illegible] shopping center, 4142 [illegible] Lake Rd. $2,100,000. [illegible] 1959.

Mo., Jefferson City—SCHOOL—[illegible] Church, 416 [illegible], school [illegible]. $700,000. Bids Fall 1959.

Neb., Omaha—WAREHOUSE—[illegible] Co., 33rd and Farnam Sts., 250 ft. x [illegible] ft., [illegible] block, steel [illegible] warehouse with 2 story [illegible] and [illegible]. $500,000. [illegible]

▲ **N. J., Trenton**—APARTMENT—[illegible] 155-22 229 [illegible] $1,000,000.

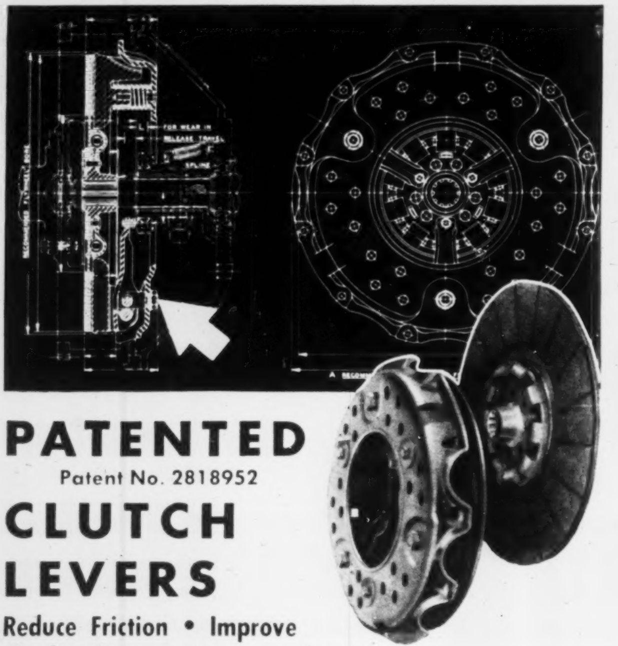
▲ **N. C., Fayetteville**—BANK—[illegible] Bank & Trust Co., Fayetteville, [illegible] $2,500,000.

Pa., Broomall—APARTMENT—[illegible] 99 Park Ave., New York, N. Y., [illegible] Rd. $500,000.

▲ **Pa., Pittsburgh**—SHOPPING CENTER—[illegible]

(Continued on page 160)

ROCKFORD



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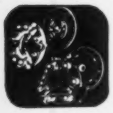
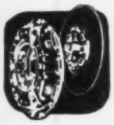
Patent No. 2818952
CLUTCH LEVERS

Reduce Friction • Improve clutch release action • and Prevent lever throw-out

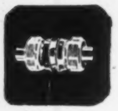
Patented rolling fulcrum pin action, in the release lever, results in much less friction and wear, and smoother release operation in this clutch than in some other types of clutches. Pin automatically returns to original position. Carefully balanced levers avoid lever throw-out at high speeds.



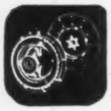
Small Spring Loaded



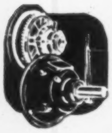
Heavy Duty Spring Loaded



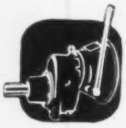
Oil or Dry Multiple Disc



Heavy Duty Over Center



Power Take-Offs



Speed Reducers

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Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

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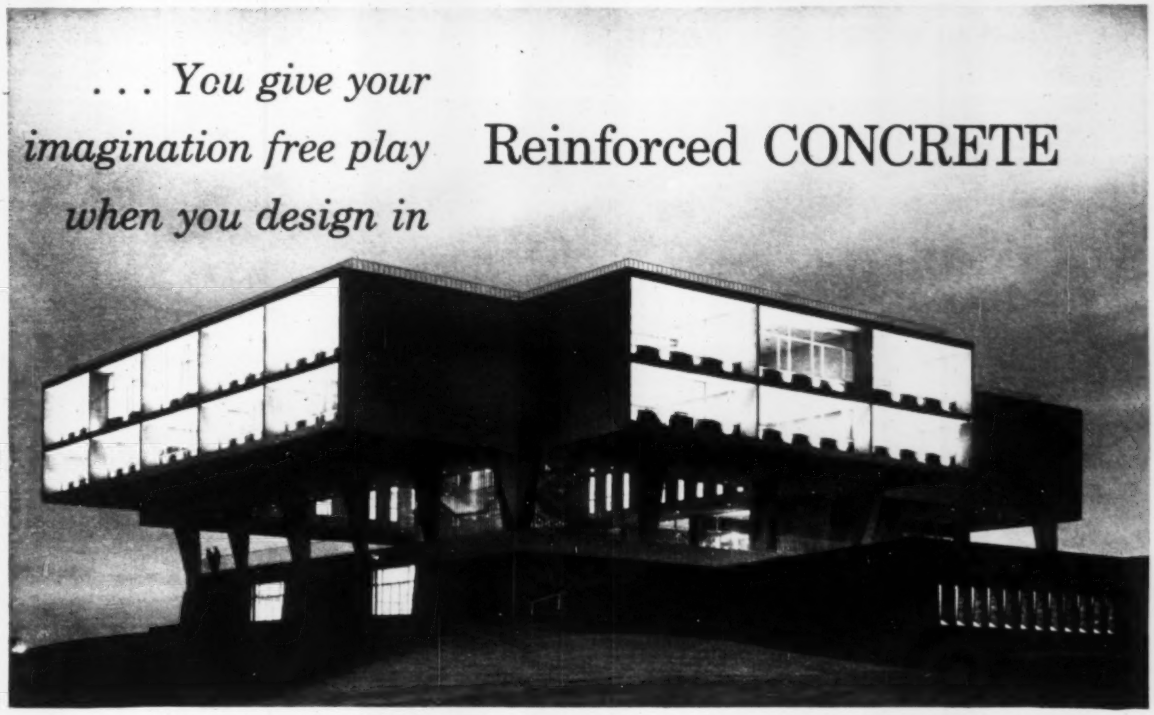
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

. . . You give your imagination free play when you design in Reinforced CONCRETE



Milwaukee County War Memorial Center. Eero Saarinen & Associates, Architects. Maynard W. Meyer & Associates, Associate Architects. Ammann & Whitney, Structural Engineers. James McHugh Construction Company, General Contractors.

Milwaukee's new War Memorial proves you can do the unusual with Reinforced Concrete

There are a number of noteworthy reinforced concrete buildings under construction and recently completed in the Milwaukee area. Prominent among them is the new War Memorial, part of a cultural community center dedicated to honoring Milwaukee County's war dead.

The lightweight reinforced concrete cantilevered upper wings present an effect of soaring flight. Glass walls on all sides of the main lobby provide unobstructed views of Milwaukee's lake front and downtown area. The Center has six levels, including a basement and subbasement.

Two other outstanding examples of recently completed Reinforced Concrete structures in Milwaukee

Central YMCA Building, Milwaukee. Architects: Grassold-Johnson and Associates. Consulting Engineer: Charles S. Whitney. General Contractors: Gebhard-Berghammer, Inc.

Milwaukee Arena. Architects: Eschweiler & Eschweiler. Consulting Engineer: Charles S. Whitney. General Contractors: Hunzinger Construction Co.

Concrete Reinforcing Steel Institute *38 South Dearborn St., Chicago, Ill.*

(Continued from page 158)

Park, Plum Borough. $1,000,000. L. A. Swanson, c/o owner, engr.

▲ **Pa., Pittsburgh**—ACADEMY—R. C. Diocese of Pittsburgh, 111 Blvd. of Allies, plans by Celli-Flynn, 335 Shaw Ave., McKeesport, academy for girls. $2,000,000.

▲ **Pa., Pittsburgh**—NATURAL SCIENCES HALL—University of Pittsburgh, 5th and Bigelow Blvd., natural sciences hall. $2,600,000.

▲ **Pa., Wormleysburg (Br. Lemoyne)**—HOUSING DEVELOPMENT—Harry Shimmel, c/o H. F. Kiehl Agency, Lemoyne Trust Co. Bldg., Lemoyne, Riverview Housing Development of 300-400 residences. $6,000,000. W. E. Sees, Jr., 4335 N. Front St., Harrisburg, consult. engr.

Tenn., Oak Ridge—MOTEL—Holiday Motels Corp., Sub-Allied Investment Co., Holiday Towers Bldg., Memphis, 100 unit motel, incl. swimming pool. $800,000.

Tex., Dallas—LIBRARY, etc.—Graduate Research Center, c/o Bd. Pres. of Southern Methodist University, research library, science-mathematic, engineering, on Southern Methodist University campus. $750,000.

▲ **Tex., Dallas**—OFFICE—Inwood Building Corp., Trinity University Bldg., plans by Hedrick & Stanley, consult. engrs. archts., 904 Fort Worth Ave., 13 story, bsmnt., 155,000 sq. ft. office. $3,000,000.

▲ **Tex., Dallas**—HOTEL, etc.—Dr. Daniel Levinson, c/o John Hans Graham & Assocs., 2000 K. St., N.W., Wash., D. C. and George Dahl, 2101 N. St. Paul St., Dallas, archt., 200 room hotel, $500,000; 6-16 floor unit apartments, $8,000,000; 3 multi-story commercial office units, $7,000,000.

▲ **Tex., Forth Worth**—SHOPPING CENTER—Frank C. Bliss & Co., 711 W. 7th St., plans by H. C. Maples, 711 W. 7th St., 1 story, 150,000 sq. ft. floor space, brick, tile, concrete, steel shopping center in Eastwood Addn., incl. parking area. $1,500,000. CD 5-29-58.

▲ **Tex., Houston**—MOTEL, etc.—Boat City, Inc., Alan Finger, 1131 Calhoun Rd., plans by A. Luciano & Assocs., archts.-consult. engrs., 600 McGowen St., motel, boat storage, golf range, swimming pool, private lake, freeway, outside city limits. $1,250,000.

Tex., Marshall—SHOPPING CENTER, etc.—Sam B. Hall, Jr., and Ernest F. Smith, 102 W. Houston St., Marshall, plans by Richard E. Bennett, Arlington, shopping center, $500,000; area and auto center hard paving, $90,000.

▲ **Wash., Renton**—SHOPPING CENTER—Cascade Center, Inc., c/o Heideman & Van Wieringen, 527 Fairview Ave. N., Seattle, 32-acre shopping center, 116 Ave. SE and SE 168 St. $2,500,000.

▲ **Wash., Seattle**—RETIREMENT HOME—Vasa Order of America Inc., Box 3917, Renton, plans by E. Mahlum, Lloyd Bldg., 4 story, 125,000 sq. ft. rein.-con. retirement home, Vasa Park, Lake Sammamish. $1,750,000.

Wis., Glendale—OFFICE-SALES—Red Star Yeast Co., 221 E. Buffalo St., Milwaukee, Zone 2, plans by Eschweiler & Eschweiler, 720 E. Mason St., Milwaukee, Zone 2, office-sales. $500,000.

Alta., Edmonton—HOSPITAL—Good Samaritan Hospital, [illegible] 70th Ave., plans by Aberdeen & [illegible], [illegible] 109th St., hospital addn. $500,000.

▲ **Ont., Toronto**—NURSES RESIDENCE, etc.—Toronto Western Hospital, 391 Bathurst St., plans by Govan, Ferguson, Lindsay, Kaminker, Langley & Keenleyside, 10 Price St., 8 story nurses residence, one 10 story and two 3 story hospital addns. Over $1,000,000. Ralph C. Manning, [illegible] Rd., consult. engr. CD 12-11-56.

▲ **Que., Valleyfield**—SEMINARY—Seminaire de Valleyfield, 169 Champlain St., seminary wing addns. $1,400,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Andalusia**—PLANT—Alabama Electric Cooperative, Andalusia, steam electric plant. $2,000,000. Burns & McDonnell Engineering Co., 45 and Troost Ave., Kansas City, Mo., consult. engr.

▲ **Calif., Newark**—PLANT—Pacific Car & Foundry Co., Peterbilt Motors Co. subsidiary, 4th and Factory Sts., Renton, Wash., truck mfg. plant. $2,000,000.

Conn., West Haven—TERMINAL—Goldner Trucking Co., 154 Water St., New Haven, truck terminal, Bull Hill Lane. $160,000.

▲ **Ga., Atlanta**—MFG. PLANT—Crown Cork & Seal Co., Erie Ave. and H St., Phila. 24, Pa., 250,000 sq. ft. metal container mfg. plant. $7,000,000.

Iowa, Chariton—WAREHOUSE—Chariton Wholesale Grocery Co., Chariton, 180 x 330 ft. warehouse addn., railroad spur, parking area, etc. $500,000. Constr. about May.

▲ **Michigan**—POWER PLANT—Consumers Power Co., Consumers Power Bldg., Jackson, 265,000 kw. Port Sheldon Power Plant. $20,000,000. Commonwealth Assocs., Inc., 252 W. Cortland St., Jackson, engr.

Minn., Roseville (P. O. St. Paul)—TERMINAL—Glendenning Motorways, Inc., 820 Hampden Ave., plans by Haarstick-Lundgren & Assocs., Inc., N. 212 First National Bank Bldg., St. Paul, terminal bldg., County Road C and North Snelling Ave. $900,000. CD 12-11.

▲ **N. J., East Orange**—ELECTRIC SUBSTATION—Public Service Gas & Electric Co., 80 Park Place, Newark, electric substation, Tremont Ave. $2,000,000.

▲ **N. J., Freehold**—PLANT—Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul, 100,000 sq. ft. magnetic products plant, Jones Siding Rd. $1,000,000.

▲ **N. J., Pennsauken**—WAREHOUSE, ETC.—Quaker City Wholesale Grocery Co., 20th and Hamilton Sts., Phila., Pa., plans by Lacy Atherton & Davis, Hotel Sterling, Market and River Sts., Wilkes Barre, Pa., warehouse and office, Rte. 130. $2,000,000.

N. C., Morganton—PLANT—Henderson Furniture Industries, Inc., Morganton, 100,000 sq. ft. Plant Addn. No. 2. $500,000.

▲ **Pa., Phila.**—PLANT—Gulf Oil Corp., 30th St., and Penrose Ave., Oxo alcohol petrochemical plant.

▲ **Tex., Houston**—PLANT—U. S. Industrial Chemicals Co. Div., National Distillers & Chemical Corp., 99 Park Ave., New York 16, N. Y., 75,000,000 lb. per year capacity polyethylene plant expansion. $20,000,000. Construction soon.

Tex., Houston—PLANT—White Nipple & Machine Co., Inc., 1140 Lockwood Dr., plant, 4 acre site on Liberty Rd. $750,000.

▲ **B. C., Vancouver**—PLANT—Western Plywood Co. Ltd., 900 E. Kent, plywood plant, Deas Island. $2,500,000.

N. S., Halifax—WAREHOUSE, etc.—Nova Scotia Liquor Comm., 157 Granville St., warehouse and administrative bldg. $800,000. CD 4-15-47.

▲ **Que., Montreal**—BAKERY—Christie Brown & Co. Ltd., 3055 [illegible] St., plans by Henry L. Pomey, 1980 Sherbrooke St. W., bread bakery, Viau St. and Ray Murphy Ave. $1,000,000. Nenniger & Chenevert, 1440 St. Catherine St. W., consult. engrs.

UNCLASSIFIED

Fla., Crescent City—GAS DISTR. SYS.—City, City Hall, natural gas distr. sys. $650,000. Harry Hendon & Assocs., 925 Sligh Ave., Orlando, consult. engrs.

Fla., Palatka—GAS DISTR. SYS.—City, City Hall, natural gas distr. sys. $600,000. Harry Hendon & Assocs., 925 Sligh Ave., Orlando, consult. engrs.

▲ **Fla., Pensacola**—DOCK—Pensacola Port Auth., 2759 Philpot St., municipal dock facilities. $5,000,000. Frederic R. Harris, Inc., 27 William St., New York, N. Y., consult. engr.

▲ **Georgia**—GAS LINES—South Georgia Natural Gas Co., 1217 Albany Rd., Thomasville, 113 mi. natural gas lines, Worth and Tift Counties. Over $2,000,000. CD 5-1-50.

▲ **North Carolina**—GAS TRANSMISSION LINE—Natural Gas Co., 325 Grace Putnam Bldg., Fayetteville, natural gas transmission line from Rocky Mount to Roanoke Rapids. $1,100,000. R. A. Ransom Co., 2501 Raeford Rd., Fayetteville, consult. engrs.

Wash., Tumwater—SWITCHING YARD—Union Pacific R.R., J. A. Bunger, ch. engr., 1416 Dodge St., Omaha, Neb., switching yard. $600,000. Constr. in Summer.

Concrete mix would grind the markings off *most* tapes!

This is Lufkin's Mezurall® tape . . . with unmatched Chrome Clad® blade that fights concrete, sand, mud and other abrasives.

Lufkin starts with a special tempered steel . . . bonds the markings to it. Then layer after layer of electroplating is applied, topped by a final layer of tough chrome. There's no other blade like it. Comes in 6′, 8′, 10′ and 12′ lengths . . . either ½″ or ¾″ widths. The Lufkin Rule Company, Saginaw, Mich.

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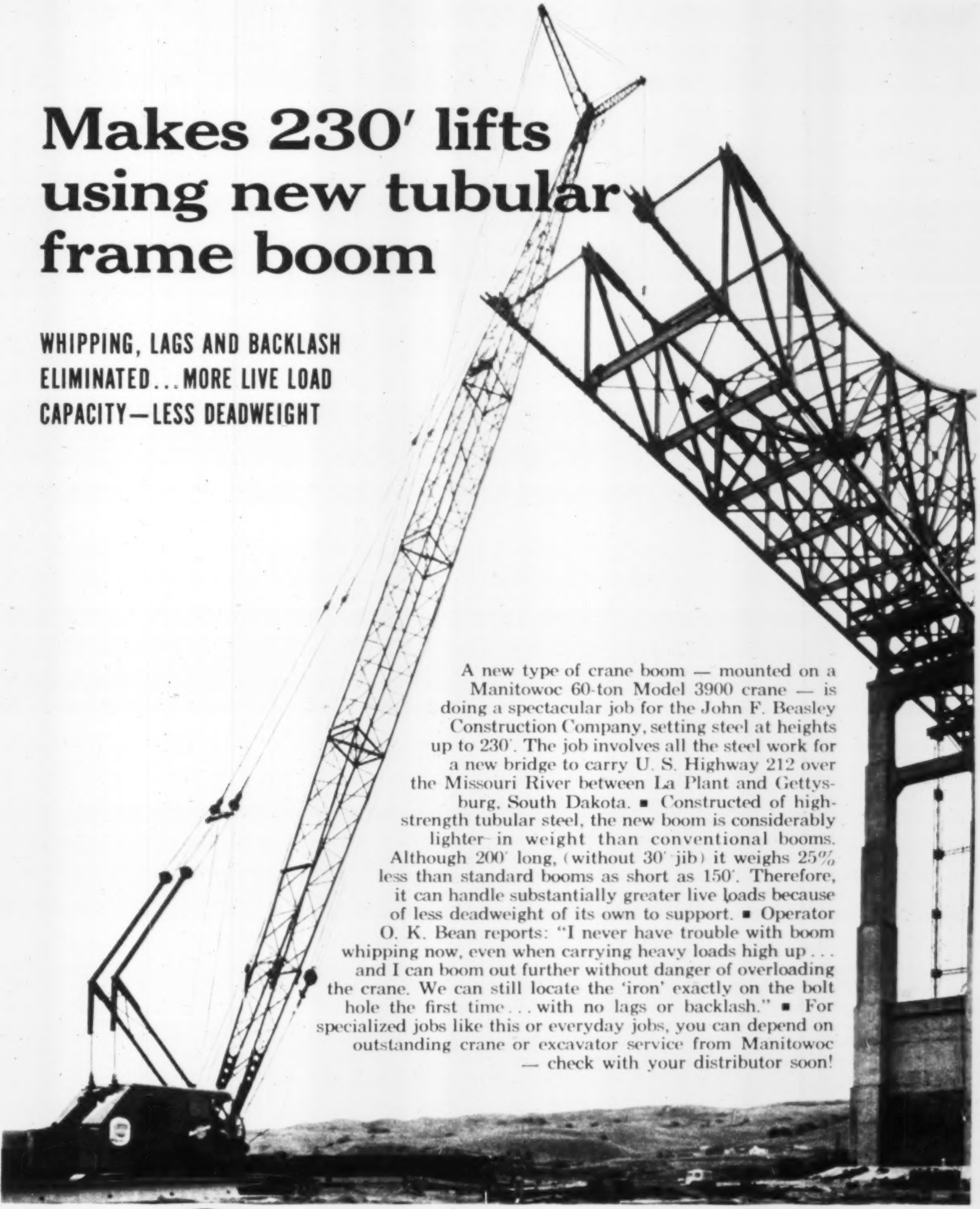
TAPES • RULES • PRECISION TOOLS

Makes 230′ lifts using new tubular frame boom



WHIPPING, LAGS AND BACKLASH ELIMINATED... MORE LIVE LOAD CAPACITY—LESS DEADWEIGHT

A new type of crane boom — mounted on a Manitowoc 60-ton Model 3900 crane — is doing a spectacular job for the John F. Beasley Construction Company, setting steel at heights up to 230′. The job involves all the steel work for a new bridge to carry U. S. Highway 212 over the Missouri River between La Plant and Gettysburg, South Dakota. ■ Constructed of high-strength tubular steel, the new boom is considerably lighter in weight than conventional booms. Although 200′ long, (without 30′ jib) it weighs 25% less than standard booms as short as 150′. Therefore, it can handle substantially greater live loads because of less deadweight of its own to support. ■ Operator O. K. Bean reports: "I never have trouble with boom whipping now, even when carrying heavy loads high up . . . and I can boom out further without danger of overloading the crane. We can still locate the 'iron' exactly on the bolt hole the first time . . . with no lags or backlash." ■ For specialized jobs like this or everyday jobs, you can depend on outstanding crane or excavator service from Manitowoc — check with your distributor soon!

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CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

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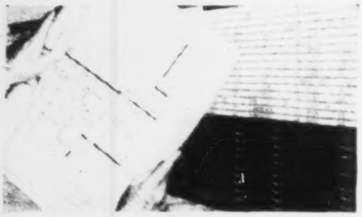

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 22 Massachusetts

HEAVY CONSTRUCTION—LB & CA

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston. Bids opened 4/7.

M. DeMatteo Constr. Co., 200 Hancock St., North Quincy, Mass., LB $5,221,390, est. $5,892,156, section Interstate Rte. 95, incl. bridges and approaches, FAP No. 1-93-1(16) & USG-11F(2), Methuen. CD 3/18.

BUILDINGS—LB & CA.

▲ Vara Constr. Co., Inc., 718 Huntington Ave., Boston, Mass., CA $1,792,000, est. $1,800,000, two ELEMENTARY SCHOOLS, Osgood and Harriet Sts., LAWRENCE, MASS. City, City Hall, Lawrence, Mass. Bids Mar. 16, CD 3/18, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 22 New Jersey
STREETS AND ROADS
April 22 Delaware, New Jersey

▲ N. Y., New York—SUBWAY STATION—BA 6/5—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, IRT Express Station at E. 59th St. and Lexington Ave. $6,000,000. CD 3/14/55.

BUILDINGS—BA

▲ Pa., Lima—SCHOOL—BA 4/23—Rose Tree Union School Dist., Barren Rd., Rose Tree Union Junior High School, sewage disposal, $2,000,000. Plans deposit $50. Baader, Young & Schultz, 1500 Walnut St., Phila., archts. Chester I. Duncan, 225 S. 15th St., Phila., engr. CD 10/13, under Central Delaware Jt. School Dist., as owner.

▲ N. J., Port Newark—CARGO DISTRIBUTION—BA 5/12—At office of Chief Engineer, The Port of New York Auth., Room 1100, 111 Eighth Ave., New York 11, N. Y. 4 cargo distribution Bldgs. (Nos. 197, 198, 261 and 262), Contr. PN-560.024. Plans deposit $30. CD 2/27, under LB.

▲ Del., Delaware City—SCHOOL—Bids Asked—Gunning Bedford School Dist., St. Georges, Gunning Bedford Junior and Senior High School, $2,950,000. [illegible] Bonner, Blake & Manning, 1101 Madison St., archts. CD 6/19.

HEAVY CONSTRUCTION—LB & CA

▲ Cayuga Foundation Corp., 90 Vesey St., New York 7, N. Y., CA $5,621,574, platform extensions to Brooklyn Bridge Station, Lexington Ave.-Fourth Ave. Line, Contr. C-128, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Mar. 20, CD 4/25, under LB.

BUILDINGS—LB & CA

▲ Terminal Constr. Corp., Hy. 17, Wood-Ridge, N. J., LB $3,748,000, general contract, UNDERGROUND PARKING GARAGE, Military Park, NEWARK, N. J. Newark Parking Auth., 605 Broad St., Newark, N. J. Bids Apr. 6, CD 3/12.

▲† Baltimore Contractors, Inc., 711 South Central Ave., Baltimore, Md., LB $10,339,000 (14 bidders), WINGS 7 and 8, Bancroft Hall, Naval Academy, ANNAPOLIS, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids Apr. 8, CD 3/17.

▲ Philip Vizzini & Son, 818 N. Franklintown Rd., Baltimore 16, Md., LB $2,008,860 (6 bidders), 1 and 2 story masonry Arundel JUNIOR HIGH SCHOOL, near Odenton, ANNAPOLIS, MD. Anne Arundel Co., Annapolis, Md. CD 4/6.

▲ Roscoe-Ajax Constr. Co., 1107 19th St. N.W., Wash., D. C., CA Total est. over $2,000,000, STORE at Wheaton Plaza Regional Shopping Center, Viers Mill Rd. and University Blvd. West, WHEATON, MD. Woodward & Lothrop, 10th and F Sts. N.W., Wash., D. C. Arthur L. Anderson, 1726 L St. N.W., Wash., D. C., archt. General Engineering Assocs., 810 18th St. N.W., Wash., D. C., engrs. CD 4/9.

▲ Franklin Builders, Inc., 1400 Silverside Rd., Wilmington, Del., Separate Contracts, $2,500,000, RESIDENTIAL DEVELOPMENT, Rogers Rd., etc., WILMINGTON, DEL. CD 2/19.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 21 West Virginia   April 22 Louisiana
April 24 Alabama   April 29 Virginia
STREETS AND ROADS
April 21 West Virginia   April 22 Louisiana
April 24 Alabama   April 29 Virginia
May 5 Kentucky

BUILDINGS—SLC

▲ Tenn., Chattanooga—SHOPPING CENTER—Thos. J. Northcutt, c/o Heery & Heery, archts., 1722 Peachtree St. N.W., Atlanta, Ga., soon lets contract 170,000 sq. ft. shopping center, Brainerd Village, $1,900,000. CD 2/6, under Vincent Bibbs, as owner.

HEAVY CONSTRUCTION—LB & CA

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort.

Talbott Constr. Corp., 30 Wall St., Winchester, Ky., CA $1,880,377, bit. conc. surf. 4.502 mi. Interstate-Covington-Lexington-Tennessee Line Rd. I 75-7 (6) 173 & 733 (1), Boone Co. Bids Apr. 3, CD 4/9, under LB.

BUILDINGS—LB & CA

▲ Heftler Homes, 4102 N.W. 183 St., Miami, Fla., Separate Contracts, $12,000,000, 1,000 RESIDENCES, MIAMI, FLA. Gerbert, Panzer & Crump, 1007 Dupont Plaza Center, Miami, Fla., engrs.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 24 Illinois
STREETS AND ROADS
April 24 Illinois

BUILDINGS—BA

▲† O., Wilmington—HOUSING—BA 4/30—Procurement Officer, Clinton County Air Force Base, 536 units Capehart Housing, Clinton County Air Force Base, IFB 33-625-59-12, $8,844,000. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO—State Hy. Dpt., Columbus, Zone 15. Bids opened Mar. 31.

O.—Don S. Cisle, Contractor, Inc., 1st National Bank Bldg., Hamilton, O., LB $658,676, est. $811,800 (8 bidders), bit. conc. 2.122 mi. State Rte. 122, Lemon Twp., city Middletown, Butler Co. and Franklin Twp., Warren Co., BUT-122-9.62 WAR-122-0.00, Butler and Warren Counties.

O.—W. L. Johnson Constr. Co. & Assocs., P.O. Box 6668, Bexley Sta., Columbus, O., LB $3,935,705, est. $4,192,000 (11 bidders), c. conc. 6.643 mi. Type T-71 and structures US Rte. 62, City of Columbus, Jackson and Franklin Twps., FRA-62-7.29, Franklin Co.

O.—A. J. Baltes, Inc., 11 Olive St., Norwalk, O., LB $2,149,631, est. $2,546,400 (6 bidders), b. conc. 3.1 mi. Type T-35 on 8020 and structures, State Rte. 7, Villages of Brilliant and Mingo Jct. and Steubenville Twp., JEF-7-11.35, Jefferson Co.

O.—C. A. Agresta Constr. Co., 4186 Greenvale Rd., Cleveland, O., LB $502,695, est. $535,200 (5 bidders), widen, resurf. 1.552 mi. State Rte. No. 82, City of Warren and Howland Twp., TRU-82-11.14, Trumbull Co. CD 3/12.

BUILDINGS—LB & CA

▲ Contemporary Constr. Co., Bellbrook, O., Own Forces, $2,000,000, 154 HOMES in Bellbrook area near Washington Rd., BELLBROOK, O.

▲ Mintz Constr. Co., 3121 Euclid Ave., Cleveland, 15, O., CA Est. $2,200,000, 4 story, 150 unit MOTEL, 3201 Euclid Ave., CLEVELAND, O. Romart, Inc., 3121 Euclid Ave., Cleveland 15, O. CD 10/9.

▲ W. B. Pate Constr. Co., 5194 West Park Dr., North Olmsted, O., CA Est. $3,000,000, 90 brick RANCH HOMES, W. Park Dr., NORTH OLMSTED, O. West Park Home Builders, 5194 W. Park Dr., North Olmsted, O.

▲ Carl M. Geupel Constr. Co., 1919 N. Meridian St., Indianapolis, Ind., CA Est. $2,450,000, 1 and 3 story rein.-con. masonry WAREHOUSE for milling and dispensing pharmaceutical materials, INDIANAPOLIS, IND. Eli Lilly & Co., 740 S. Alabama St., Indianapolis, Ind. A. M. Kinney, Inc., 2905 Vernon Place, Cincinnati, O., engr. CD 1/28.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 24 Minnesota, Missouri
STREETS AND ROADS
April 24, 30 Kansas   April 24 Minnesota, Missouri

HEAVY CONSTRUCTION—LB & CA

▲ Ashbach Constr. Co., 1910 W. County Road C, St. Paul, Minn., LB $2,125,405 (4 bidders), Vadnais conduit, Contr. 3-20,540 lin. ft. 90 in. conduit complete with intake and terminal structure at Lake Vadnais, ST. PAUL, MINN. City, City Hall, St. Paul, Minn. Bids Apr. 7, CD 3/18.

P. Lametti Constr. Co., 615 Drake St., St. Paul, Minn., LB $152,509 (6 bidders), Contr. 2, furnish, install 1,255 lin. ft. 90 in. conduit at Lake Vadnais (St. Paul, Minn.).

▲† Guy H. James Constr. Co., 4901 N. Sewel St., Oklahoma City, Okla., LB $3,108,693, est. $4,554,349, Lock and embankment Dardanelle Lock and Dam Diversion, CIVENG-03-050-59-37, ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Apr. 8, CD 2/10.

▲† Morrison-Knudsen Co., Johnson, Drake & Piper, Paul Hardeman, Inc. & Olson, 411 West 5th St., Los Angeles 13, Calif., LB $40,668,034, est. $45,678,942 (15 bidders), Sched. 6, combination of all Schedules WS-107A2 technical facilities, Complex 1A, 1B and 1C Intercontinental Ballistic Titan Base at Lowry Air Force Base, ENG-25-066-59-73, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Apr. 14, CD 4/6.

BUILDINGS—LB & CA

▲ Wm. G. Farrington Co., 1661 Tanglewood Rd., Houston, Tex., CA $2,672,549, SHOPPING CENTER, incl. storm and sanitary sewer lines, area and auto center asphalt paving, area lighting, water lines and fire plugs, HOUSTON, TEX. Tanglewood Corp., 1661 Tanglewood Rd., Houston, Tex.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 6, 7 California
STREETS AND ROADS
May 6, 7 California

BUILDINGS—BA

▲ Wash., Seattle—OFFICE—BA 7/30—City, County City Bldg., 200,000 sq. ft. steel frame or rein.-con. office, with underground parking for city office, 4th Ave. and Cherry St. Over $2,000,000.

HEAVY CONSTRUCTION—LB & CA

▲ CALIFORNIA—State Div. Hys., 1120 N St., Sacramento.

John Delphia & Fred J. Early Jr. Co., Inc., P.O. Box 607, Patterson, Calif., CA $1,838,924, paving to constr. 3.3 mi. 4 lane freeway between 0.3 mi. south of Salinas River and 1.2 mi. north of Soledad, U. S. 101 bypassing Soledad, incl. 1,530 ft. bridge parallel to and west of present Salinas River Bridge and 2 other bridges, Monterey Co. Bids Mar. 25, awarded Apr. 6, CD 3/27, under LB.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles.

Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, Calif., CA $9,725,920, East Los Angeles Interchange at jct. of Santa Monica, Santa Ana and Golden State Freeways in Los Angeles, incl. 28 bridges primarily traffic separation and ramp structures, substructure work on 2 addnl. bridges, revision of 2 existing structures and erection 17 concrete retaining walls, grading, paving 2 mi. interchange roadway, Los Angeles Co. Bids Mar. 26, awarded Apr. 6, CD 3/31, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 29, May 6 Ontario

BUILDINGS—BA

▲ Ont., Toronto—ADMINISTRATIVE CENTRE—BA 5/1—Bell Telephone Co. of Canada, 393 University Ave., Toronto, 10 story, penthouse, bsmnt., sub-bsmnt., structural steel Administrative Centre, 50 Eglinton Ave. E. $4,000,000. Mathers & Haldenby, 10 St. Mary St., archts. C. D. Carruthers & Wallace, Consultants Ltd., 92 Yorkville Ave., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ S. McNally & Sons Ltd., P.O. Box 157, Postal Station C, Hamilton, Ont., CA $1,790,911, Contract B, road work, Queen Elizabeth Way connections, HAMILTON, ONT. City of Hamilton, City Hall, Hamilton, Ont. Awarded Mar. 30, CD 2/11, under LB.

▲ YUKON TERRITORY—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Poole Constr. Co. Ltd., 2402-2A St. SE, Calgary, Alta., LB $2,003,014 (13 bidders), Stewart and Pelly River bridges and guide fence on approaches to Yukon River bridge at Carmacks (Contr. 4-59-YT).

BUILDINGS—LB & CA

▲ Foster Wheeler Ltd., St. Catharines, Ont., CA Est. $3,000,000, low power NUCLEAR REACTOR for testing uranium fuels, Canadian Atomic Establishment, CHALK RIVER, ONT. Atomic Energy of Canada Ltd., Chalk River, Ont.

▲ Perini Ltd., 49 Jackes Ave., Toronto, Ont., CA $2,000,000, CHICLET FACTORY and OFFICE, Thermos Rd., TORONTO, ONT. Adams Brands Ltd., 14 Dickens St., Toronto, Ont. Bids Mar. 12, awarded Apr. 2, CD 3/2.

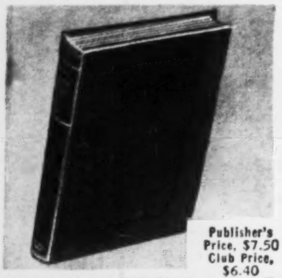
▲ Continental Housing Corp., 4944 des Groseilliers St., Duvernay, Que., Owner Builds, $2,000,000, 130 HOUSES, DUVERNAY, QUE.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ B. W. I., Trinidad—HOTEL—BA About 5/15—Hotels Development Corp., Trinidad, 4 story service bldg. hotel with 2 swimming pools for Hilton Hotels International, Waldorf Astoria, New York 22, U. S. A. $5,500,000. Warner, Burns, Toan & Lunde, 414 Madison Ave., New York, N. Y., U. S. A., and Toto Ferrer, Puerto Rico, and Watkins & Partners, Port O'Spain, Trinidad, archts. CD 2/12/58.

(Proposal Advertisements see pp. 181 to 184)



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Statically Indeterminate Structures by C. K. Wang. A basic workbook-reference for use in structural analysis.

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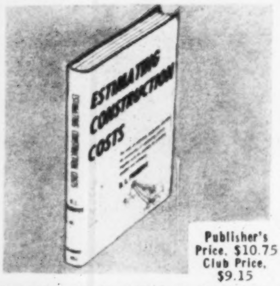
The Testing and Inspection of Engineering Materials, 2nd Ed. by H. E. Davis, G. E. Troxell, and C. T. Wiskocil.



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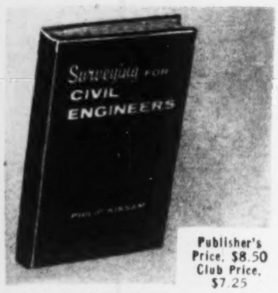

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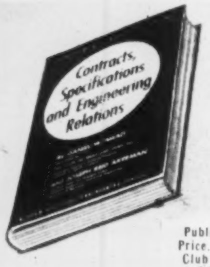

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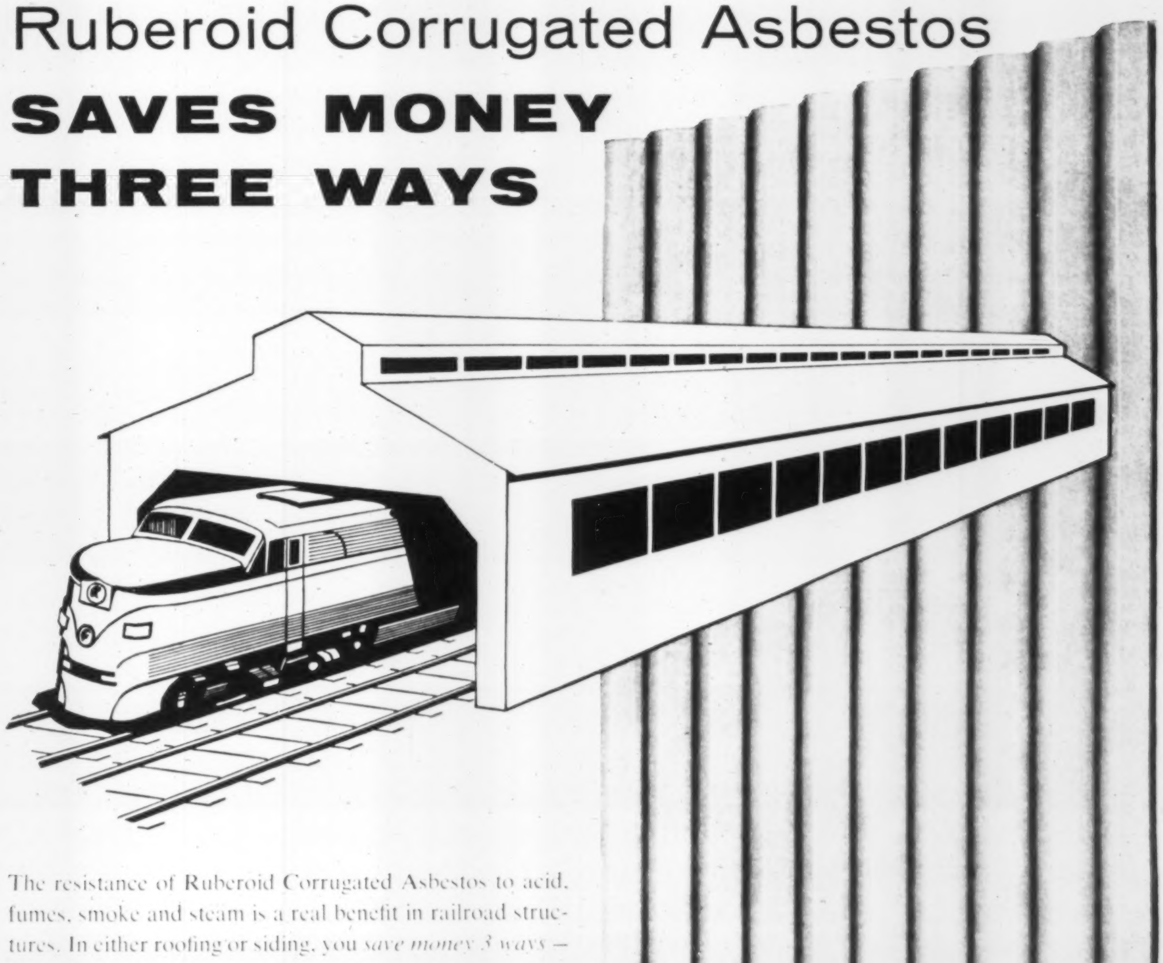

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The RUBEROID Co.

ASPHALT AND ASBESTOS BUILDING MATERIALS

CONCRETE PERFORMANCE REPORT

POZZOLITH concrete employed in new Air Force Academy to meet full range of engineering requirements for all types of concrete specified

AIR FORCE

Largest single construction project in U. S. Air Force history, the Air Force Academy Complex at Colorado Springs marks a milestone in modern concrete design and construction. Nearly 95% of the $114 million allocated for "pure construction" has gone into nearly 70 major building contracts—including over 4 million square feet of enclosed floor area. Construction at the 17,900 acre Academy site included the placing of some 800,000 cubic yards of concrete for buildings, retaining walls and bridges.

On-site concrete control lab—The Air Force Academy Construction Agency and the architects—Skidmore, Owings, and Merrill—jointly supervised all construction and established an on-site concrete materials control laboratory early in 1956. During July and August, 1956—with only a few thousand yards of concrete placed—they observed erratic and low compressive concrete strengths. The wide range and rapid changes in temperature were suspected as the cause.

Evaluation tests of concrete materials—In August, they engaged Commercial Testing Laboratories, Denver, to make comprehensive tests of the concrete materials under the range of temperatures being experienced at the job site. Their tests clearly established that POZZOLITH would provide uniform, high strength throughout the wide range of temperature changes experienced between early morning concreting at about 50°F and mid-day concreting at 75° to 80°F. In September 1956, POZZOLITH was first employed in concrete at the Academy. The successful performance of POZZOLITH here led engineers to investigate the use of POZZOLITH for control of other classes of concrete—including lightweight aggregate concrete, prestressed concrete, concrete for bridge decks and structural concrete for retaining walls and buildings.

2-mile retaining wall—Concurrent with concreting of foundation caissons, work began on 10,000 feet of concrete retaining wall that reached a height of 36 feet over much of its length.

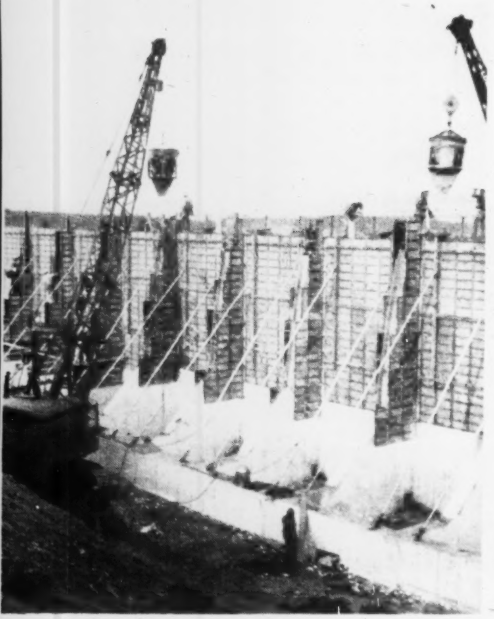
Design strength of the concrete required here was 3,000 psi at 28 days. With 1½″ top size aggregate, 5 bags of cement, 36 gallons of water and POZZOLITH—a placeable mix of 2″ to 4″ slump was obtained that readily exceeded the 3,000 psi specification. Tremie trunks were used to limit the free fall of the concrete to 5 feet—maximum permitted by specifications. The mix was easily vibrated into place with no segregation or honeycomb. Retaining walls required approximately 24,000 cubic yards of concrete—supplied by a job site batch plant and delivered in ready-mix trucks. This mix met strength specifications and provided necessary workability for proper placement in the heavily reinforced, narrow forms.

Prestressed bridge girders—Construction work also included the erection of six prestressed bridges varying in length from 144 to 600 feet. There were two railway spans and four highway bridges—their girders standardized at 120 feet long in a modified T design, 71″ deep. In all, 128 girders were manufactured. Sixteen shorter girders were erected for the two railroad bridges each of which consists of two simple supported spans of 72 feet each.

Concrete for these girders contained 7½ sacks of Type I cement, 1760 lbs. coarse aggregate (¾″ top size), 1300 lbs. sand, 30.5 gallons of water and POZZOLITH Retarder.

This produced a cohesive, workable mix of about 2″ slump and 4% entrained air. The POZZOLITH Retarder provided an initial retardation which permitted proper consolidation of the mix, yet accelerated early strength. Specifications called for a compressive strength of 4,500 psi before application of stress. This strength was achieved in three to five days, air cured. Stress was applied at that time. Concrete attained a compressive strength of approximately 6,500 psi in 7 days and well over 7,000 psi in 28 days.

Concreting bridge decks—Initial retardation was required in the concrete bridge decks to provide an initial delay in hardening so that the complete deck for each span could be completely



CONCRETE RETAINING WALLS reach 36 feet high over much of the 10,000 foot wall length. Tallest pours were made by giant overhead crane. Walls required approximately 24,000 cubic yards of POZZOLITH concrete—a placeable mix of 2″ to 4″ slump with design strength of 3,000 psi. Contractor: T. F. Scholes, Inc., Reading, Pennsylvania. Concrete Contractor: Long Construction Co., Denver.

AERIAL VIEW of nearly completed Air Force Academy. Construction under supervision of the Air Force Academy Construction Agency. Architects: Skidmore, Owings & Merrill, Chicago • Contractors include: Jack Adams & Haake Construction Co., Santa Fe, New Mexico • B. H. Baker Co., Inc., Colorado Springs • J. W. Bateson Co., Inc., Dallas • T. C. Bateson Construction Co., Dallas • A. H. Beck Foundation Co., San Antonio • Colorado Constructors, Inc., Denver • Dondlinger & Sons Construction Co., Inc., Wichita • E. & M. Construction Co., Denver • Elgas Construction Co., Colorado Springs • Farnsworth & Chambers Co., Inc., Houston • A. S. Horner Construction Co., Denver • Peter Kiewit & Sons' Co., Denver • Wade Lahar Construction Co., Tulsa & Denver • Long Construction Co., Denver • Matelich & Hanson, Inc., Englewood, Colorado • Robert E. McKee, Inc., Santa Fe, New Mexico • Mountain States Construction Co., Denver • Nowers Construction Co., Pueblo, Colorado • Frederick Raff Co., Colorado Springs • Ramsey-Leftwich, Lubbock • Saxet Foundation Co., San Antonio • T. F. Scholes, Inc., Reading, Pa. • Del E. Webb & Rubenstein Construction Companies, Phoenix • J. F. White Engineering Co., Englewood, Colorado • Pozzolith Ready-Mixed Concrete: Concrete Materials, Inc., Kansas City • General Concrete Co., Colorado Springs • Transit Mix Concrete Co., Colorado Springs.

ACADEMY

poured before initial set occurred. This permitted full dead load deflection and achieved true composite action between girders and the concrete deck. Because the contractor wanted to use the completed decks as work areas in placing girders for the remaining spans, it was important that these slabs be placed into service at an early date. Pozzolith Retarder provided the required, controlled initial delay in hardening and produced early strengths equal or better to what could be expected with a comparable plain concrete mix. At placing temperatures below 50°F, no extended delay in hardening occurred.

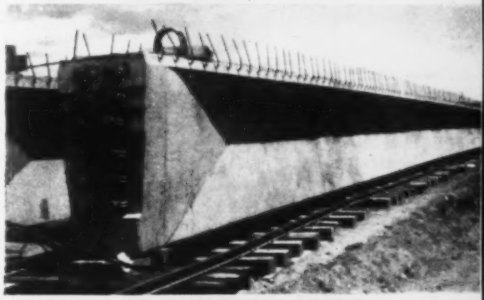
Lightweight concrete—Design of many of the buildings included lightweight aggregate concrete floors for the second, third and fourth stories—and concrete roofs. Preliminary mix designs indicated that with local lightweight coarse aggregates, natural sand for most of the fine aggregate and Pozzolith—the 3,000 psi compressive strength specification could be met with 5 sacks of cement and air content maintained at 9% ± 1½%. This lightweight concrete had excellent workability and weighed approximately 105 lbs. per cubic foot, well below the 110 lb. maximum specified.

Pozzolith and Master Builders field service—Pozzolith was an important aid in meeting and exceeding specification requirements in over 750,000 of the 800,000 cubic yards of concrete at the Air Force Academy. For each of the many classes and types of concrete specified—it provided the required batch-to-batch uniformity, most economically, for the broad range of job requirements and varied climatic conditions encountered at the site.

The Master Builders field men and the Company engineering staff worked closely with project engineers, the field control laboratory, contractors, and concrete suppliers to achieve the common goal of uniform, superior quality concrete at lowest cost-in-place.

For *your* job . . . with *your* materials Pozzolith concrete is best. Neither plain concrete nor concrete with any other admixture can match the results you obtain with today's Pozzolith.

On any current or future concrete projects, the local Master Builders field man will welcome discussing your requirements. Call him in. He's at your service—and expertly assisted by the Master Builders research and engineering staff—unexcelled in the field of concrete technology. Write us for complete information.



PRESTRESSED CONCRETE BRIDGE GIRDERS attained 28-day compressive strength of over 7,000 psi. Construction of all 144 Pozzolith girders was by A. S. Horner Construction Co., Contractors, Denver. Consulting Engineer: L. Boduroff, Denver. Prestressing: Prescon Corp., Corpus Christi, Texas.

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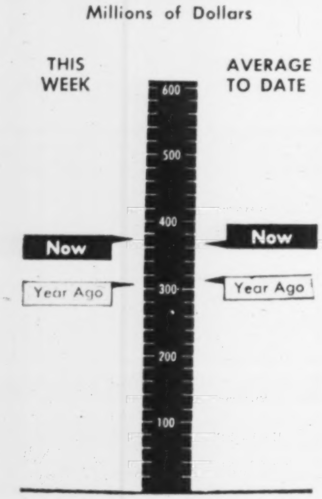
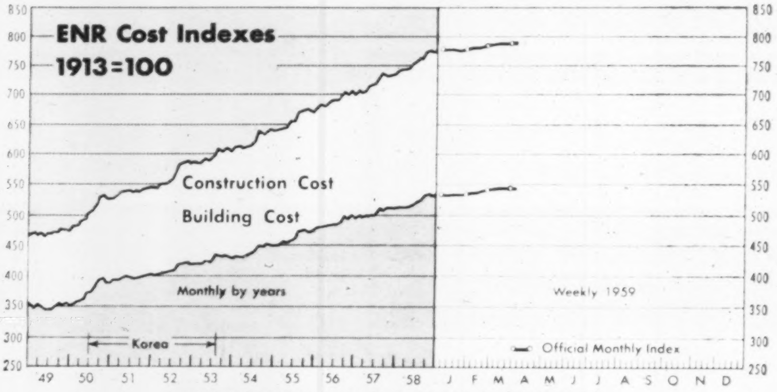
Construction Scoreboard

CONTRACTS ...





CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Apr. 9 1959	% Change from Mar. 12 1959	% Change from Apr. 10 1958
Construction Cost	785.69	+0.3	+5.3
Building Cost	542.68	+0.1	+4.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 16 wks 1959 millions	Chge '58-'59 %
All Heavy Constr.	$371.3	$5,779.3	+14
PRIVATE	167.7	2,768.9	+13
PUBLIC	203.6	3,010.4	+14
State & Municipal	176.0	2,113.2	+2
Federal	27.6	897.2	+60
By Type of Work			
PUBLIC			
Waterworks	7.8	129.9	+63
Sewerage	12.4	172.0	+4
Bridges*	7.2	184.6	+29
Highways	79.9	828.1	+2
Earthwork, Waterways	8.3	255.1	+25
Buildings, Excl. Housing	60.6	795.4	+15
Housing	2.5	174.2	−45
Unclassified	24.9	471.1	+108
PRIVATE			
Buildings			
Mass Housing	86.7	1,183.3	+8
Commercial	42.7	678.2	+17
Industrial	32.2	784.3	+24
Unclassified	6.1	123.1	−15

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of April 9 millions	Cum. 15 wks 1959 millions	Chge '58-'59 %
Corporate Securities	$96.8	$1,103.4	−34
State and Municipal:			
All Except Housing	106.0	1,771.1	−15
Housing	....	30.6	+51
Federal Loans	2.4	34.3	−44
Federal Aid	....	....	....
Total Nonfederal	$205.2	$2,939.3	−23
Federal Appropriations:			
Projects in U. S.	....	....	−100
Outside U. S.	....	....	....
Total New Capital	$205.2	$2,939.3	−32

CONTRACTS AWARDED

	1959 Mar. (millions)	1959 3-Mos. (millions)	% Change from 1958 Mar.	% Change from 1958 3-Mos.
Total U. S., ENR reported	$1,644.3	$4,599.9	+18	+20
Private	837.4	2,273.1	+36	+30
Public	806.9	2,326.8	+ 3	+12
State and Municipal	590.8	1,673.1	− 5	+ 1
Federal	216.1	653.7	+34	+54
ENR Volume Index, 1913=100	586	506	+13	+14

NEW CONSTRUCTION CAPITAL

	1959 Mar. (millions)	1959 3-Mos. (millions)	% Change from 1958 Mar.	% Change from 1958 3-Mos.
Total U. S.	$841.8	$2,512.0	−26	−36
State and Municipal Bond Sales	564.6	1,644.9	− 8	−12
Corporate Security Sales	265.8	838.6	−47	−43
Federal Loans, Aid (nonfederal work)	11.5	28.5	−25	−49
Federal Appropriations (federal work)	0	0	....	−100

MATERIALS SHIPMENTS

	Unit	1959 & 1958 Dec. (D) Jan. (J) Feb. (F)	1959 & 1958 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	14,785(F)	29,107(2)	+35	+19
Concrete Paving Awards, PCA	thous sq yd	6,756(F)	15,720(2)	+48	+57
Fabricated Structural Steel	thous tons	216(F)	440(2)	−24	−27
Bookings, AISC	thous tons	294(F)	530(2)	+59	+52
Reinforcing Bars, Net, AISI	thous tons	141(F)	276(2)	+32	+23
Lumber, NLMA	mil fbm	2,655(F)	5,296(2)	+15	+11
Orders	mil fbm	2,706(F)	5,491(2)	+20	+14
Production	mil fbm	2,618(F)	5,247(2)	+11	+ 8
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	428.3(D)	6,456.1(12)	+ 9	+ 2
Vitrified Clay Sewer Pipe	thous tons	117.2(D)	1,752.4(12)	+33	+ 8
Structural Tile, Unglazed	thous tons	38.1(D)	555.1(12)	− 1	−13
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	2,697.9(J)	2,697.9(1)	− 9	− 9
Asphalt Siding	thous sales sqs	54.5(J)	54.5(1)	−12	−12
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	85.8(J)	85.8(1)	+29	+29
Wire and Cable	mil lbs	26.5(J)	26.5(1)	+21	+21
Extruded Shapes (soft alloys)	mil lbs	58.3(J)	58.3(1)	+20	+20

EMPLOYMENT AND FAILURES

	Unit	1959 & 1958 Dec. (D) Jan. (J) Feb. (F)	1959 & 1958 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Contract Const Employment, BLS	thous	2,251(F)	2,297(2)**	+ 4	+ 1
Contract or Failures, Dun & Bradstreet					
Number		164(F)	352(2)	− 7	−0.3
Liabilities	thous	$6,911(F)	$15,185(2)	−21	−18

**Average per month

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Business and Finance

Will Tollroads Live Again?

- **There's new speculation that tollroad construction may revive.**
- **Chief Reasons: Slow progress and money troubles on the Interstate System, and improvement in the financial condition of tollroads.**

The financial black-eye suffered by tollroads in recent years is losing its darkest hues. There is even some speculation that tollroads may again appear on the construction scene.

It has been generally assumed that the 41,000-mile federal-aid Interstate Highway System would kill tollroads in the future.

Now, the American Bridge, Tunnel and Turnpike Association says there could be a revival in tollroads in perhaps five years. This forecast is supported by the views of some consulting engineers.

But there is one qualification: Any new tollroads are not likely to be big projects extending across the length or breadth of an entire state. They will probably be either extensions of existing turnpikes or strictly local or area facilities.

This newest speculation is founded on two basic beliefs.

- The 16-year Interstate highway program may require longer than that to complete.
- The financial outlook for most of the nation's tollroads is brightening.

Financing troubles and delays over route selection are the reasons why some consultants think the Interstate program will take more than 16 years to complete.

When the Interstate was first approved, its cost was placed at $27.5 billion. Now it has been boosted to $40 billion. Chances are good that there may be an upward revision from this estimate.

The federal government is not the only one running short of highway money. The states, too, are becoming strapped for road money (ENR Apr. 9, p. 22).

Tollroads can be one way of providing urgently needed facilities in densely populated areas. And Samuel P. Brown, a partner in Coverdale & Colpitts, New York City consulting engineering firm, says that in such areas the public may rather have a tollroad now than a free road in 1972 or later.

It's also suggested that tollroads will be more readily accepted when the public and investors become aware of the financial soundness of existing turnpikes.

This already has occurred in Florida. There, the high earnings of the Sunshine State Parkway, extending 110 miles from Fort Pierce to Miami, have revived thoughts of extending the road to Orlando.

But there's more than that to the earnings picture. Kentucky Turnpike, Maine Turnpike, and the New Jersey Turnpike are among those covering their interest requirements by a comfortable margin.

The turnpikes that are falling short of interest requirements are doing so by only a whisker. In these cases, the amount originally borrowed will sustain the routes until natural growth or additional feeder links provide the necessary income to cover debt service fully.

Only the West Virginia Turnpike is defaulting on its interest payments to bondholders; and it's in a class by itself. Costs soared above original estimates because of difficulties encountered during construction through the rugged terrain the road traverses. Also, it starts and terminates in relatively isolated areas and is approached from generally poor roads.

Maurice N. Quade, of the New York City consulting engineering firm of Parsons, Brinckerhoff, Hall & Macdonald, says earnings requirements of tollroads could be lowered if bonds were backed by the state.

A state guarantee behind indebtedness usually results in interest rates lower than those on straight revenue bonds backed only by a facility's income.

Lawrence S. Waterbury, New York City consulting engineer, says that toll-financing feeder facilities could be one way of spurring the Interstate System to on-time completion.

He suggests that this form of toll road could be partially subsidized through payment of a portion of gasoline taxes to the authority administering the road. The reimbursement could be based on total mileage traveled. He says that another type of subsidy could be state-paid policing.

Mr. Waterbury believes that the Interstate program will be a major stimulus to more toll facility construction of all types. This would add to an already large volume of toll facility design and construction.

The American Bridge, Tunnel and Turnpike Association is compiling a multimillion-dollar list of toll facilities proposed, under study or ready to go. This includes bridges and tunnels.

A spot check by ENR indicates that slightly more than $900 million worth of all types of toll facilities are proposed or under consideration. This includes the $150-million, 11-mile extension of the Massachusetts Turnpike from its present terminus at Weston into Boston; a $16.8-million Penellas Bay system in Florida; the $30-million second tube of the Sumner Tunnel in Boston; a $200-million Puget Sound crossing and a $35-million tunnel through the Cascade Mountains at Naches Pass, Wash.

Authorization for the Puget Sound Crossing was not provided by the Washington State legislature, just adjourned, but it will be up for action again in 1961.

There is one state, however, that appears to have given up on tollroads and other toll facilities. The North Carolina legislature has passed a measure abolishing the state's two turnpike authorities.

The two authorities eliminated were the Carolinas-Virginia Turnpike Authority and the North Carolina Turnpike Authority.

But there's some life yet in the toll idea in North Carolina. Two toll bridges having an estimated cost of $23.6 million have been proposed. One would cross the Cape Fear River at Wilmington and the other would cross the Alligator River in Tyrell County.

(*B&F continued on page 173*)

Here's the Sequence!

9:15 Shooting Cationic Bitumuls

9:20 Cover-stone is spread

9:25 Tandem rolling of cover-stone

"Flusher" test proves...

CATIONIC BITUMULS

IS YOUR BEST INSURANCE AGAINST SUDDEN SHOWERS

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Since then, we have put this new material to many rigorous tests on actual jobs all over the country. We needed rain to show, dramatically, how Cationic Bitumuls protected new paving and surfacing against sudden showers. When we couldn't **get** rain we **made it!**

CONSTRUCTION DATA:

On a very revealing test in Long Beach, California, for instance, we used a street flusher to simulate heavy rain. On 1,100 ft. of 72-ft. wide street pavement, various sections were blocked out to provide "control" testing. These sections were "shot" with both regular grades and Cationic Bitumuls; were covered and rolled in rapid sequence. **Within 15 minutes after application of the binder,** the street flusher (as shown above) "watered" these sections with the equivalent of a heavy rain. The sections were then opened to traffic.

RESULTS:

The sections sealed with Cationic Bitumuls retained practically all cover-stone. As expected, the regular grade of emulsified asphalt "washed-out" under this severe test and most of the stone was lost under early traffic.

Many years of research, testing and development work have gone into the production of Cationic Bitumuls. This product offers two distinct advantages to the road building and pavement maintenance industries: it coats almost **all** aggregates, even those usually regarded as "difficult"; and it extends the normal working season.

It will pay you to get all the facts on NEW Cationic Bitumuls. Just call our nearest office.

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Unequalled work-ability for push-loading big scrapers, bulldozing and ripping earth, rock, coal and ore, towing heavy equipment and other big tractor jobs.

TC-12

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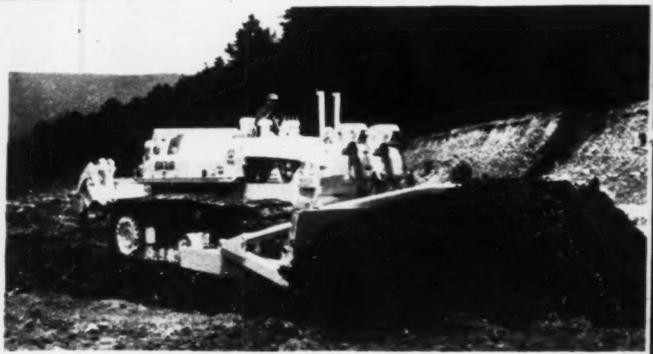

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Will U.S. donate Ellis Island as . . .

A Prep School for Travelers?

For 64 years Ellis Island gave foreign arrivals their first taste of American life. Now the former immigration center may give Americans going abroad their first taste of foreign ways.

The General Services Administration is studying a proposal to make Ellis Island an international cultural training school. The students would be employees of American companies heading for foreign assignments, as well as other Americans going abroad.

The proposal accompanied a $10 token bid from New York consulting engineer William Brennan and a group of his business acquaintances.

Their plan was fostered by the American Council of Learned Societies, which would operate the facility.

Before the GSA can donate the island for such a school, it must have the approval of the Department of Health, Education and Welfare. Even if HEW endorses the plan, final decision is up to GSA officials. So far HEW has only a preliminary memo from its New York office—no formal request for an opinion on the proposed use of the island.

GSA must either accept or reject this bid, and the 23 others received, by May 9. Highest bid submitted at the March 9 bid opening was $671,000 by Sol G. Atlas, who wants the island for a pleasure resort (ENR March 19, p 45).

GSA officials will not reveal the government's asking price. Estimates have pegged it at $800,000 to $1 million. The agency is trying to get the best possible deal for the taxpayer, says a GSA spokesman.

But proposed use of the land, as well as the money offered, also may determine who gets the island. Is an international cultural center more desirable than a pleasure resort? The GSA spokesman says, "I'd put it this way—it wouldn't have an inferior standing."

According to plans of the American Council of Learned Societies, the 35 buildings on the island would be extensively remodeled, rather than demolished. It is not known who would foot the renovation bill, which is estimated at between $6 million and $8 million.

Business in Brief . . .

• ENR's second cousin—Architect and Engineer, a 53-year-old monthly magazine in the western building field, had been purchased by the McGraw-Hill Co. of California, a subsidiary of McGraw-Hill Publishing Co., which publishes Engineering News-Record. Beginning with the July, 1959 issue the publication's name will be changed to Western Architect and Builder.

• Key men need more—Otis Banks, of the North Carolina State Highway Employees Association, asked an appropriations committee of the state legislature to approve a 10% pay boost for highway employees. "Under present salary schedules, we can't hold key personnel . . . whether they be key engineers or key janitors," said Mr. Banks.

• Billions for roads—A $5-billion road construction program is planned by Ontario's Department of Highways. It would be carried out over 20 years. Another $2 billion will be required for administration and maintenance.

• Chicago gets school funds—Chicago voters approved a $50-million school building bond issue by a 5 to 1 margin. Tentative plans call for $31.5 million to be spent on new construction, additions, modernization and increased fire safety at elementary schools; $10 million on high schools; $5.5 million on Chicago teachers colleges; and $3 million for land acquisition.

• Distribution net—Montgomery Ward & Co. of Chicago plans a nationwide network of 10 distribution centers costing a total of $50 million. Construction of two of them will start this summer in Fort Worth and Baltimore. Two others are under way in Kansas City, Mo., and San Leandro, Calif.

• Miami building boom—A record year for building construction in Miami—$70 million worth in 1959—is predicted by the director of the city's building department. Building permits calling for new construction of $16 million were issued in the first quarter.

Steel Imports Gain

Report details competition from foreign products

The American Iron and Steel Institute has pinpointed the growth of foreign steel products in the U. S. market last year (ENR March 12, p. 21). It reports the following 1958 increases:

- Imports accounted for 18% of total reinforcing bars available in the U. S. (including net imports). In 1957, imports took only 7% of the re-bar market.
- Pipe and tubing imports took 3.2% of available supply in 1958 compared with 1.9% in 1957.
- Thirty percent of the nail market went to imports last year compared with 20% in 1957.

Low wages give other countries a big competitive advantage over U. S. mills, AISI says. Steel workers' hourly wages in some major foreign steel-producing countries ranged from 66% to 86% below the U. S. average of $2.92 during 1957, it reports.

A recent example of tough foreign competition occurred at the Niagara power project.

The Power Authority of the State of New York gave its latest steel order for 900 tons of structural steel to the Societa Anonima Electrificazione of Milan, Italy, on a bid of $264,700. Bethlehem Steel Co., with a plant close to the power project, didn't come within $100,000 of matching the delivery price of the Italian company, 4,000 miles away.

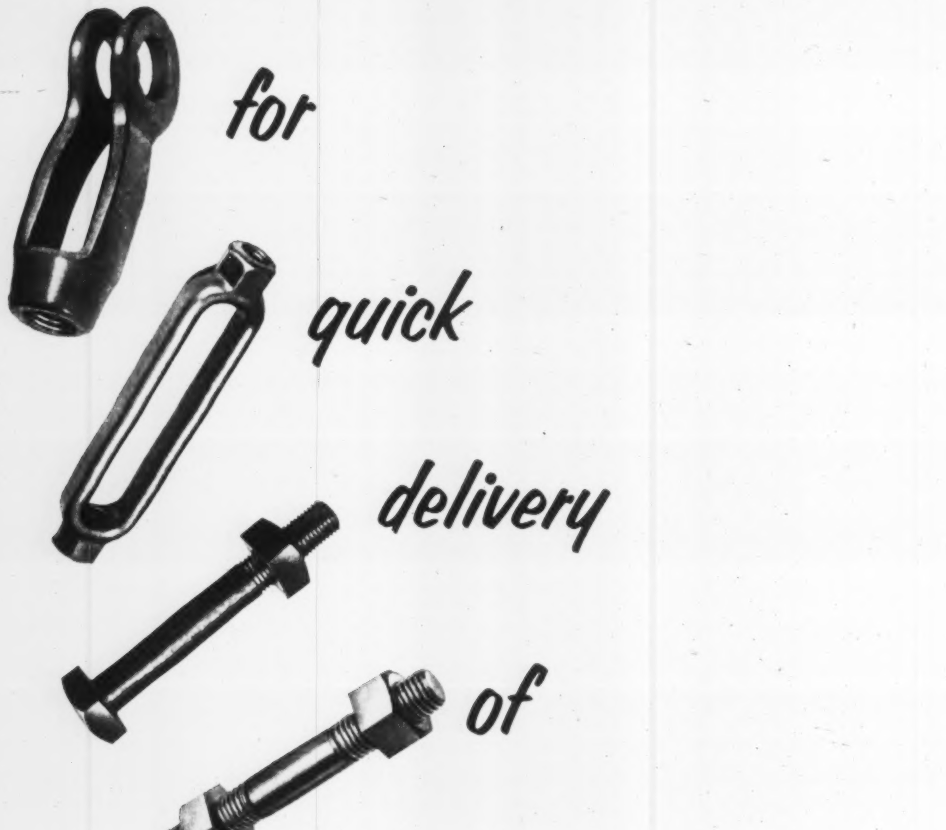
One way to fight back is to cut domestic prices. This is being tried in Canada now. Atlas Steel, Ltd. of Welland, Ont., sliced its prices on stainless steel by 15% to 20%.

Despite the rise in imports, domestic steel companies are currently producing record amounts of steel of all types. Much of this tonnage, however, is being stockpiled by manufacturers as a hedge against a steel strike.

Some countries buy steel scrap in the U. S., convert it into steel products with their own cheaper labor and ship it back here for sale at prices 20% to 25% below U. S. products.

This is hurting our steel firms, says A. Carl Weber, engineering director for Laclede Steel Co. He says about 80% of the barbed wire used in the U. S. is imported. Steel men realize that "maintenance of foreign trade is important . . . but it's hard to convince a plant owner who sees his business disappearing . . . that our policies are being intelligently handled," he says.

(*B&F continued on page 175*)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Bond Vote Upheld

Court ruling clears way for two Jersey reservoirs

A New Jersey Supreme Court decision last week cleared the last legal barrier to a proposed multimillion-dollar development of the Raritan River watershed (ENR May 23, 1957, p. 26).

The court declared valid a $45.8-million bond issue authorized in a statewide referendum last year. The money would finance works designed to bring water from the Raritan River, located in the middle part of the state, to water-short communities in the northern New Jersey area.

The scheme calls for construction of two reservoirs in the Raritan Basin.

The state's Department of Conservation, which will build and operate the system, now hopes to start construction this year. Negotiations are under way with engineering firms for development of final plans.

The legislation for the reservoirs originated in the state Senate. Challengers contended that the bond issue was illegal because revenue-raising bills had to originate in the Assembly.

The Supreme Court decision upholds a ruling made last month by the Appellate Division of the Superior Court. The Superior Court ruled the state constitution imposed no such restrictions on referendums—even money-raising referendums.

Owners of Old Buildings May Have to Revamp Them

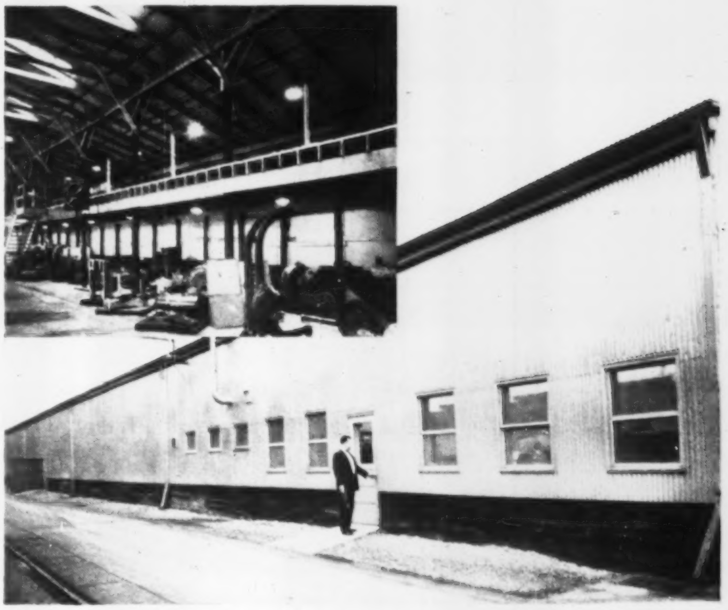
Stair well fireproofing may cost owners of older Milwaukee apartment buildings between $10 million and $20 million. So claimed a building owner in an appeal to the Dane County Circuit Court.

But the court upheld a decision of the Wisconsin Industrial Commission backing up a Milwaukee building inspector who ordered a firm to enclose stair wells of a seven-story apartment building with fireproofing materials.

The order was issued under a 1918 building code regulation requiring fireproofing. That regulation, however, was not enforced in new construction until 1928.

During the decade-long hiatus, said Circuit Court Judge Norris Maloney, some 1,700 apartment buildings were constructed and some 40,000 exemptions and exceptions to the code were granted.

Now the code may be applied even to those structures that weren't originally required to conform.



BUILDING TIME:
7 Weeks
COST: $2.95 a square foot

This 56 ft. x 234 ft. industrial storage and maintenance repair shop was built in only 7 weeks. It provides office space and has a 15 foot balcony on either side. Siding and roof are corrugated aluminum. The floor is concrete.

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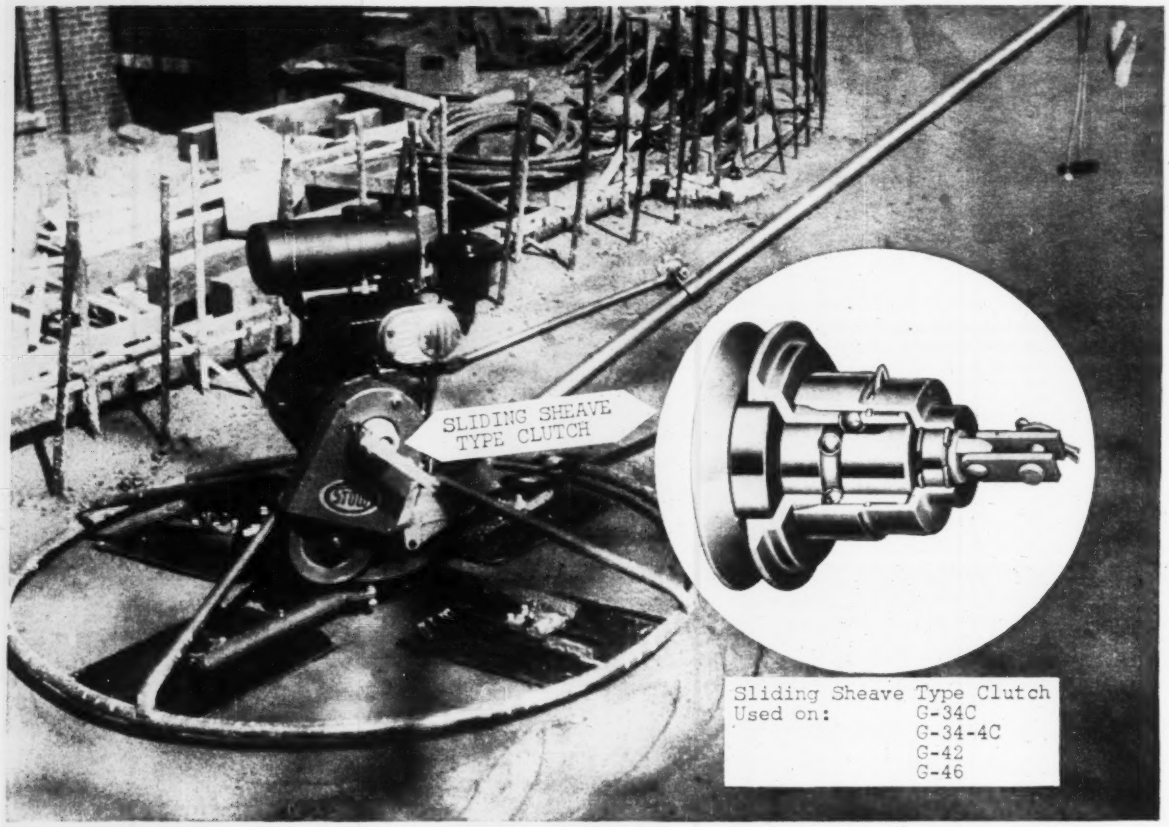

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G-34-4C
G-42
G-46

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Contractors and builders who have used them tell us that STOW Roto-Trowels do the fastest, most economical job on floating and finishing operations.

One big reason for this top performance is STOW'S exclusive manual clutch control which permits easier engine starts *at any* throttle setting, higher efficiency, less maintenance, faster and smoother finishing operations. The STOW Roto-Trowel is safer too, since the manual clutch automatically stops blade rotation within 1/6 second after the operator releases the handle, without stopping the engine!

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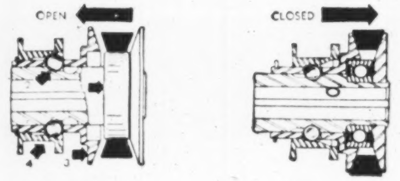

When the Clutch is disengaged, the sheaves of the pulley are open as shown. The belt rides slack on the outer race of a free running ball bearing.

To start trowel blades, the operator engages the clutch. The sliding sheave which is mounted on ball bearings is carried forward into the closed position. This forces the belt up off the bearing so that it grips the sidewalls of the pulley.

This smooth clutching eliminates grab, results in a slow, even start. With this clutch, belt life is increased since there are no belt stretching problems.

To stop the trowel, the operator lets go of the clutch control. Instantly, the belt pushes the sliding sheave back to the open position and rides free on the idler bearing.

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AGC Attacks Labor Reform Bills

- **Employer association urges Congress to divorce labor reform legislation from Taft-Hartley Act changes.**
- **It condemns the Kennedy pre-hire proposal and says it would open another door to labor abuses.**

The difficulties in getting any new labor legislation through Congress were underlined again last week at a hearing called to take testimony from the Associated General Contractors of America, Inc.

AGC witnesses blasted both the front-running Kennedy-Ervin bill—already approved by the Senate Labor Committee—and the Eisenhower Administration's own bill.

Frank J. Rooney, chairman of AGC's Labor Committee, told the House Education and Labor Subcommittee that contractors favor reform legislation as well as amendments to tighten the Taft-Hartley Act. But they would prefer Taft-Hartley as it is, rather than see enactment of either the Kennedy or the Administration bills.

Ever since the bills were introduced, the association has taken the position that both bills move in the opposite direction from labor reform and that they would weaken existing labor regulations.

• Pre-hire clause—The pre-hire provision in the Kennedy bill drew Mr. Rooney's hottest fire. That provision would allow unions to sign labor contracts with building and construction employers before workers are hired. It also would require all workers to join the union within seven days after employment.

Mr. Rooney described this provision as "ill-advised and ill-conceived." He charged it would "virtually give any labor union official a complete blank check with no safeguards or controls and would cause untold labor abuses instead of correcting them."

Actually, the same pre-hire provision was embodied in last year's Kennedy-Ives bill, which passed the Senate but bogged down in the House. AGC unsuccessfully opposed the provision in the Senate committee again this year.

Mr. Rooney made a sweeping indictment of the pre-hire provision: "The set-up for shakedowns is inherent in this clause. The set-up for coercion and pressure on small contractors is inherent in this clause. The seeds of industrial strife and unrest are inherent in this clause. Area-wide bargaining would suffer in the construction industry . . ."

Rep. James Roosevelt (D., Calif.) said that Mr. Rooney was "tilting at windmills." Mr. Roosevelt defended the provision on the grounds that it "only makes legal what is already being done" in the industry. He differed with Mr. Rooney and other AGC witnesses over whether the National Labor Relations Board has, in fact, been permitting pre-hire arrangements in the construction industry.

Mr. Rooney admitted employers now constantly make agreements with unions before men are actually employed on the job site. But, there is "no premature recognition when employers negotiate with unions representing a pool of construction workmen who are constantly being employed by one or more members of an association of employers or so-called multi-employer groups," he said.

Mr. Rooney charged "unscrupulous" union leaders or contractors would use the pre-hire provision to their own advantage and disrupt multi-employer bargaining and existing good relations between contractors and building trades unions.

• An alternative—Mr. Rooney urged the committee to consider as an alternative a provision allowing the National Labor Relations Board to certify a building trades union as bargaining agent of construction workers without holding a certification election. This proposal was originally agreed to by employers and union leaders who attended meetings called several years ago by Secretary of Labor James P. Mitchell to work out labor legislation that both construction labor and management could support.

The certification proposal, like the pre-hire one, would enable a union to become the legal bargaining agent for employees before they actually entered into an employment relationship (ENR Feb. 12, p. 21).

Both proposals are designed to overcome the present difficulty of holding union representation elections in the construction industry, which stems from heavy turnover of workers. The present dispute is over the choice of a solution, not over the primary objective. Even lawyers agree the differences resolve themselves into rather fine points.

While the construction unions no longer like the certification proposal, Mr. Rooney said the proposal would go a long way toward protecting existing union security agreements and preventing industrial unions extending their jurisdiction into construction.

This certification proposal is part of the Administration bill. But, said Mr. Rooney, the Administration later "tacked on" its secondary boycott provisions. It is this feature of the Administration bill that makes it objectionable to AGC. Said Mr. Rooney: "The President said the secondary boycott is indefensible—except in the construction industry. We don't believe that."

What the Administration proposes is that a union having a dispute over wages, hours or working conditions with one contractor can strike all contractors at a common construction site. This would reverse the Denver Building Trades case, the argument being that in such a situation there is no neutral contractor. The AGC recently said this would "make general contractors second-class citizens as compared with other industries."

Mr. Rooney told the House committee that new labor legislation should outlaw all secondary boycotts and close existing secondary boycott loopholes rather than relax any of the present restrictions.

• Is the die cast?—Mr. Rooney also urged the committee to write a labor reform bill—and stop there. He said pre-hire, secondary boycott and anything else to do with Taft-Hartley should be handled separately.

But committee Chairman Graham Barden (D., N. C.), sponsor of a reform bill the AGC said it could support, and any reform bill "directly or indirectly" affects or changes something in the Taft-Hartley Act. Mr. Barden, however, expressed agreement with Mr. Rooney's opposition to a pre-hire provision and also indicated he preferred to work for a reform bill first and leave specific Taft-Hartley amendments for a separate bill.

But Rep. Carroll Kearns (R., Penna.) said he felt "the die has been cast and we cannot separate them."

(*Labor continued on page 178*)

JOBS FOR ALL

Labor rally suggests cure for unemployment . . .

Stimulate Jobs With Building

The construction industry was singled out by the AFL-CIO last week as the place to start in creating new jobs to put the nation's unemployed back to work.

"Building is the surest and most effective way to create jobs," President George Meany declared as he opened a federation-sponsored unemployment rally in Washington.

The rally was staged to focus national attention on the challenges presented by the persistently high level of unemployment.

The day before, the government had released the latest figures—4,360,000 unemployed in mid-March. Although this was an improvement of 390,000 over the month before, it was still the highest March figure in more than a decade, except for last year. More than half the improvement (230,000) was attributed to seasonal factors.

Construction employment also improved up to 2,412,000—but it was still 200,000 short of the December, 1957, level.

Immediately after the rally, Senate Majority Leader Lyndon Johnson (D., Tex.), who shared the rally platform with Mr. Meany, asked Congress to set up a fact-finding commission to conduct a two months' study of the unemployment problem. His resolution was co-sponsored by 67 Senators and was adopted by the Senate Friday.

Two reasons lay behind Mr. Meany's emphasis on construction activity.

One, he said, is that "22 percent of building trades workers are now unemployed—the highest rate in any industry."

The other reason he explained this way:

"A large-scale building program will set off a chain reaction of stimulus to all other major industries. More steel, more lumber, brick and glass will have to be produced. There will be a greater demand for furniture, appliances, household wares, autos, textiles and innumerable other necessities of modern home life. Wholesale trade and even the neighborhood store will quickly feel the beneficial effects."

To get the ball rolling, Mr. Meany urged federal legislation to launch "a vast building program of desperately needed improvements." He specifically mentioned schools, moderately priced homes, new airports, better roads and improved community facilities.

Taking a leaf out of the book of the AFL-CIO Building and Construction Trades Department, he defined his proposal as the basis of a "safe and sound investment" program, not a spending spree. Part of the cost, he contended, would be reimbursable and the balance would be defrayed by a "tremendous upsurge in tax revenues."

Most of the rest of the federation's recommendations on the unemployment problem seek to provide temporary or long-range relief from the effects of unemployment, as opposed to the creation of new jobs. They all add up to higher labor costs for employers. Here are some of the proposals:

- Federal minimum standards for state unemployment benefits.
- A higher minimum wage and broader coverage.
- Union action to secure "justified" wage increases.
- A shorter workweek to spread employment.

They are variously aimed at cushioning the shock of unemployment, bolstering consumer purchasing power and making available work go further.

The AFL-CIO, in advancing its program, sharply disagreed with Administration optimism over employment prospects.

Secretary of Labor James P. Mitchell, a rally speaker, predicted that by October unemployment would fall to 3 million and that total employment would rise to 67 million, representing an advance of 3 million.

The AFL-CIO contends that this will not occur by itself. It argues that "millions of jobs" have been wiped out permanently by increased labor productivity, automation and improved methods of production. And it says the unempolyment situation is bound to grow worse as the nation's expanding population pours new workers into the labor market.

The federation contends that industrial production has recovered more than 95% of its recession loss while industrial employment has regained only 40% of its loss—meaning that only two out of five laid-off workers have been rehired. (While March employment was up 1.1 million, unemployment was down only 390,000.) It also points to the fact that the number of long-term jobless—those out of work for 15 weeks or longer—increased another 80,000 in March to a total of 1.5 million.

Failure to cope with the problems, it says, threatens our industrial and agricultural markets and courts "the risk of economic collapse."

The Johnson resolution calls for a specially appointed Commission on Unemployment to study conditions in areas of high unemployment and to report back to Congress in 60 days.

Supreme Court May Study Tax on Strike Benefits

The Internal Revenue Service has decided to ask the U. S. Supreme Court if union strike benefits are taxable.

Riding on the outcome are an estimated half-million dollars of tax refunds for strikers at the Kohler Co., of Sheboygan, Wis., as well as millions for other workers.

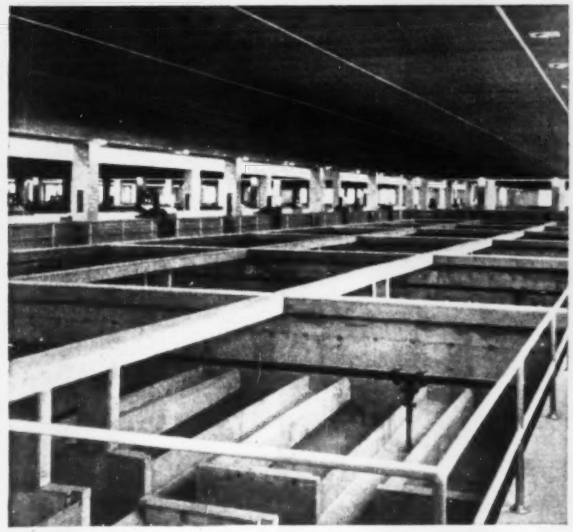
The case involves a Kohler striker who was taxed $108 on $565 in strike benefits received from the United Auto Workers (AFL-CIO). He sued the Internal Revenue Service in Milwaukee's Federal Court for a refund of the tax. The jury ruled that the strike benefits were not taxable, but it was reversed by the federal judge. The judge's ruling, in turn, was reversed by the U. S. Court of Appeals at Chicago.

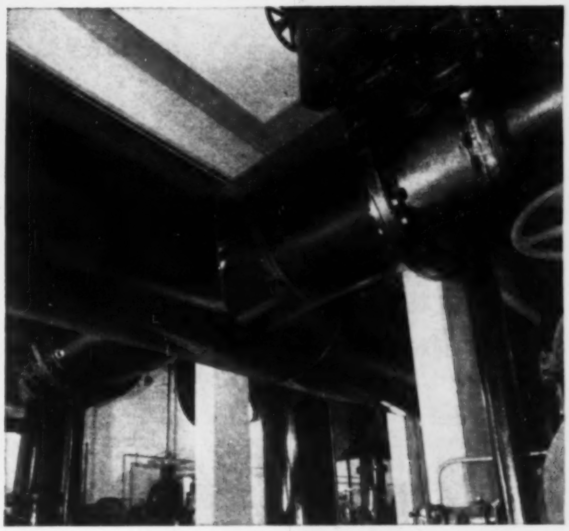
The IRS intends to continue taxing strikers' benefits pending action by the Supreme Court.

(*Labor continued on page 180*)

Philadelphia's New Torresdale Plant Installs 191

ALLIS-CHALMERS VALVES





Plan to stay ahead... MODERNIZE!

At the new 423 MGD Torresdale Pre-Treatment and Rapid Sand Filter Plant, 191 Allis-Chalmers rubber-seated butterfly valves, in sizes from 20 inches to 96 inches, are being installed. Morris Knowles Inc. of Pittsburgh was the Consulting Engineer for the Engineering Bureau of the Philadelphia Water Department on this new, modern water purification plant. When it goes into operation, it will increase both the quality and quantity of water for approximately 62% of Philadelphia's users.

Photos above show a section of the 94 separate filters and the massive filter pipe galleries where the A-C rubber-seated butterfly valves are installed. Compact and easy to operate, these valves have gained a reputation in numerous installations for completely satisfactory performance with only nominal maintenance requirements.

Product information and engineering assistance can be obtained from your nearest A-C valve representative, or by writing Allis-Chalmers, Hydraulic Division, Valve Department, York, Penna.

Hydraulic Division

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ALLIS-CHALMERS

Labor in Brief . . .

• Wage freeze rejected—David McDonald, president of the steelworkers union, flatly rejected a proposal that steel wages be frozen voluntarily for a year. The suggestion was made by 12 big steel producers as a means of combatting inflation, unemployment and foreign competition.

• Hiring discrimination—Skilled Negro craftsmen have charged discrimination on St. Louis public works and municipal bond projects. Carpenters, bricklayers and other skilled Negro building tradesmen claim only token numbers have been hired. A 1956 city ordinance forbids racial or religious discrimination on federal aid and municipal public works projects.

• Prevailing wage law dead—A bill to require payment of prevailing local wages on public construction contracts was killed by the Arkansas Senate. The House had approved it. Amendments to the bill had removed street, highway, bridge, public school and college construction from its purview.

• "Family-size" benefits—The Iowa House of Representatives has before it a "family plan" workmen's compensation bill. The bill would provide top weekly payments for job-connected disability of $32 to $44, depending on the size of the worker's family. Present limit is $32 a week regardless of family size.

• Pickets can stay—A U. S. District Court denied the Mes-Tex Construction Co. an injunction to remove an ironworkers' picket line from a roofing job at the Houston docks. The court also denied a union petition for an injunction against the company. The union claimed Mes-Tex was using apprentices where journeymen were required.

• Price and wage review? The United Auto Workers Union has urged Congress to set up a new federal agency empowered to review proposed price and wage increases in major industries. A bill that originally proposed White House review is now pending.

Court Ends Strike Litigation

The U. S. Supreme Court has refused to review a lower court ruling that makes an AFL-CIO building trades council liable for illegal strikes by its affiliates when the strikes are a logical consequence of earlier action of the council.

The court refusal will make it more difficult for the building trades unions to organize. It ends several years of litigation over union and contractor efforts to stabilize labor conditions in Baltimore through use of a standard agreement. One of the purposes of the agreement was to insure that union contractors would use only union subs and that nonunion workers would not be put on union jobs.

Efforts to implement the program led to a multi-union strike against Selby-Battersby Co. Secondary boycott charges were filed and the case has been in the courts nearly four years.

Effect of the latest legal action is to allow the decision of the Fourth Circuit Court of Appeals to stand. That decision overruled the National Labor Relations Board, which had exonerated the council. The court pinned liability for the strike on the council for two reasons: The council had helped arrange the preliminary meetings out of which the standard agreement came; and it did not "disavow" later developments.

The lower court also noted that the council and one striking union had an interlocking officer.

New Pacts in Dallas Avert Two Strikes

Wage disputes that came close to tying up millions of dollars worth of construction work in Dallas and southern Indiana were settled earlier this month with new labor contracts granting 12½- and 15-cent wage increases.

The Dallas settlement, negotiated by Associated General Contractors, gives members of iron workers' Local 481 a 25-cent wage boost spread over two years—12½ cents now and the same amount next year. At the end of the two-year contract, iron workers will be earning $3.55 an hour; reinforcing steel workers, $3.30; and top skilled sheeters, $3.82½.

Meanwhile, members of Laborers' Local 795 in nine southern Indiana counties agreed to accept a 15-cent wage increase under a one-year contract. The settlement affects about 60 contractors and 850 union workers.

Implied Covenants

Contracting party cannot forestall a contingency essential to contract

"In all contracts there is an implied undertaking by each party that he will not do anything to prevent the other party from carrying out the agreement on his part; and a party cannot insist upon a condition precedent if he has prevented its performance; for he is then precluded from asserting it as a defense to an action upon the contract (Young v. Hunter, 6 N.Y. 203, 207; Patterson v. Meyerhofer, 204 N.Y. 96, 100, 97 N.E. 472, 473) and this includes doing anything that prevents the other party to a contract from earning his fees or agreed compensation. Zadek v. Olds, Wortman & King, 166 App. Div. 60, 63, 64, 151 N.Y.S. 634, 635, 636; Carns v. Bassick, 187 App. Div. 280, 282, 283, 175, N.Y.S. 670, 671, 672."

An interesting application of the principle was involved in a case where several contractors who had had no experience in subway construction were contemplating a bid for a subway job. They made an agreement with an engineer whereby the engineer was to prepare the bid. It was agreed that in the event they got the job they would employ the engineer to handle the construction work and would pay him a percentage of the profits earned.

In accordance with the agreement, the engineer prepared the bid. Their bid was the lowest bid.

One of the prerequisites of being awarded the job was that the low bidder would have to submit a financial statement showing liquid assets to the amount of 10% of the amount of the bid. Between the time the bids were opened and the date set for submitting the financial statement, differences arose between the contractors who were involved in the bid. They finally decided that they did not want the job. In order to accomplish this purpose, they deliberately submitted an insufficient financial statement with the result that their bid was rejected.

Under the employment contract, the engineer was to receive 25% of the profits earned on the contract. Upon the refusal of the contractors to come to some agreement for payment to the engineer, the engineer brought an action to recover 25% of the profits that the contractors would have made had they obtained the job.

The case was dismissed by the trial court on the ground that no contract had been awarded to the contractors and no profits had been earned. This judgment was reversed by the appellate court[2] and a new trial ordered.

The court held that a person cannot prevent the happening of a future event upon which compensation depends and set up his own wrongful act as a defense.

(1) Baum & Sons, Inc. v. Educational Alliance, 172 N.Y.S. 2d 1015, N. Y. Supreme Court, Special Term, March 14, 1958.

(2) Beer v. Decker, 251 N.Y.S. 922.

Contractor and Sub Waive Right To Arbitrate

Each party to a contract, by suing the other party without first attempting arbitration, may forfeit his right to future arbitration under that contract.

Trucco, a subcontractor, sued the general contractor, Bregman Construction Corp., and its surety, New Amsterdam Casualty Co., in the U. S. District Court of Indiana for money allegedly due on materials and labor furnished under the subcontract. Bregman Corp. asked for a stay of the action while the dispute was arbitrated, as called for in the contract.

Previously, Bregman had sued the subcontractor and its surety for breach of contract in a state court. The district court held that each party, in starting court action against the other, had waived his right to arbitration.

In upholding the district court's decision, the appellate court reasoned that Bregman, by filing its New York suit for breach of contract, repudiated its own promise to arbitrate as spelled out in the subcontract. This repudiation gave Trucco, the subcontractor, the election of arbitration which it did not exercise in the New York action. Trucco, by filing its complaint in the U. S. District Court of Indiana, made its election not to arbitrate. Thus each party elected not to arbitrate, the court decided. It held that Bregman thereby conclusively waived arbitration.

(1) United States v. Bregman Construction Corp., 256 F. 2d 851, U. S. Court of Appeals, June 20, 1958.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: May 26, 1959

Contract GWB-190.014

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
NEW YORK APPROACH
SECTION NO. 9

Pursuant to the provisions of the Highway Law and special provisions for projects financed with Federal Aid Funds, sealed proposals for the construction of Section 9 of the approach roadway system in New York City for the lower level expansion of the George Washington Bridge will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 26, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $100.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $100.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, April 16, 1959

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS of Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere.

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: May 15, 1959.

Comision Ejecutiva Hidroelectrica Del Rio Lempa

Sealed Bids (Contract Documents 225-5) will be received at San Salvador, El Salvador, C. A., until 4:00 PM. CST, May 15, 1959, for furnishing labor, materials, and equipment for Construction of San Salvador-Santa Ana 115 KV Transmission Line, approximately 52 kilometers long, situated in the Central part of El Salvador, Central America. The principal items of construction are: Clearing 20 kilometers; Furnish and Erect 165 Wood Pole Structures; Furnish and Install: 477 MCM 24 x 7 ACSR Conductor 144,000 kilograms, 3/8" High Strength Galvanized Shield Wire 42,900 kilograms, and Conductor and Shieldwire Hardware and Accessories. Proposals may include alternate bid for structures of design different than those in the specifications. Completion by June 1, 1960.

The Contract Documents require prequalification of bidders and the following information must be submitted for prequalification: list of similar work with dates, total amount of contract, and references from clients, list of equipment available for the work and ownership of same, statement of financial resources, banking references, and other information by which fitness to submit a proposal can be judged. All pre-qualification information must be sent to both the Comision Ejecutiva Hidroelectrica del Rio Lempa, Edificio Duenas 407, San Salvador, El Salvador, Central America, and Harza Engineering Company, 400 West Madison Street, Chicago 6, Illinois, USA. Contract Documents will automatically be issued to qualified bidders.

Bids must be submitted in triplicate in accordance with the Instructions to Bidders. A bid bond or certified check as guarantee will be required with each bid.

The right is reserved to make award on any bid or to reject any or all bids.

Financing—Payment for foreign expenditures for the construction of the transmission line will be made from proceeds of a loan, guaranteed by the Republic of El Salvador, from the International Bank for Reconstruction and Development to the Comision Ejecutiva Hidroelectrica Del Rio Lempa. Payment for local expenditures will be made from funds of the Comision Ejecutiva Hidroelectrica Del Rio Lempa.

Bids: May 4, 1959.

Roulo Creek Outlet Enclosure

SEWER SECTION 91
(B5-272-59)

Sealed proposals for the construction of Sewer Section 91 will be received by the City of Dearborn, Michigan, at the Office of the City Clerk in the Municipal Building, Michigan Avenue and Schaefer Road, up to and including May 4th, 1959, at 2:00 P.M., Eastern Standard Time. Bids will be publicly opened and read aloud at that time.

The work consists of constructing 2234 ft. of triple box outlet; 708 ft. of double box outlet; 247 ft. of 5'-6" open cut; 185 ft. of 3'-6" tunnel; 78 ft. of 24" tunnel; 753 ft. of 3'-6" open cut; 136 ft. of 27" open cut; 891 ft. of 24" open cut; 321 ft. of 16" open cut, together with related structures, connections, manholes, and overflow chambers.

Plans, specifications and proposal forms may be obtained at the Office of the City Clerk. A deposit of $25.00 will be required for each set taken out, to be refunded to persons submitting a proposal or to persons returning plans and specifications on or before May 18, 1959.

Only bids in accordance with the specifications will be considered. A certified check or cashier's check (BID BONDS WILL NOT BE ACCEPTABLE) in an amount of not less than 5% of the bid must accompany the proposal.

JOSEPH CARDINAL
CITY CLERK

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5184) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, May 12, 1959, for furnishing three (3) 900 BHP, natural gas engines complete with chain drives, standard accessories, auxiliary equipment, and spare parts for River Pumping Plants, Mercedes Division, Texas, Lower Rio Grande Rehabilitation Project. Delivery is desired within 180 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division,
Engineering News-Record
Class. Adv. Div.,
P. O. Box 12, N. Y. 36, N. Y.

Bids: April 23, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 23rd day of April 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Essex (Rte. 22)	R.C. 59-40	Ticonderoga-Montcalm Landing S.H. 8073	1.19	Asphalt Concrete Pavement	$3,000 Plans $5	$51,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genessee Street, Utica 1, New York						
Madison & Oneida (Rte. 31)	FARC 59-33	Oneida-South Bay, Pt. 2, S.H. 1361 Canastota-South Bay, S.H. 812 Oneida Valley-State Bridge, Pt. 1 and Pt. 2, S.H. 8367 State Bridge-Verona Station, S.H. 8432 Project F-540(2)	7.12	Asph. Conc. Type 1A Pavt., Prestressed Conc. Beam Bridge 3 Span 178.5'	$67,000 Plans $5	1,214,000
Oneida (Rte. 12)	FARC 59-12	Boonville Town Line-McKeever, S.H. 5248 Alder Creek-Lewis County Line, S.H. 5307 Boonville-Port Leyden Pts. 1 & 2, S.H. 8472 Project F-1157(1)	9.39	Asph. Conc. Pavt.=9.33 Miles; Misc. Work=0.06 Mi. Widen Exist Br. 28' SP. I-Beam	$87,000 Plans $5	1,588,000
DISTRICT No. 3, Earle E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga (Rte. 31B)	FARC 59-28	Weedsport-Elbridge, S.H. 9075 Project F-534(1)	0.38	Asph. Conc. Type 1A Pavt.=0.36 Miles; Misc. Work =0.02 Mi.; Pres. Conc. Beam Bridge 60' Span	$9,500 Plans $5	163,000
Cortland (Rte. 41)	FARC 59-20	Homer Village: Clinton Street, S.H. 1636 Project U-215(5)	0.26	Asph. Conc. Type 1A Paving Pres. Conc. Beam Bridge 41.5'	$9,000 Plans $5	160,000
Tompkins (Rte. 96B)	FARC 59-18	Ithaca-Danby, Pt. 3, S.H. 5213 Project F-39(4)	4.34	Asph. Conc. Type 1A Pavement	$46,000 Plans $5	$30,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus & Erie	FASS 59-10	Gowanda Village: Aldrich Street, Pts. 1 and 2 Project S-444(1)	1.37	Asph. Conc. Pavt.=1.35 Mi.; Misc. Work=0.02 Mi.; Comp. I-Beam, Cant. Susp. Br. 3 Span 316'	$40,000 Plans $5	733,000
Chautauqua (Rte. 5)	FARC 59-30	Silver Creek Connection, S.H. 52-4 (Howard St. Bridge) Project F-458(12)	0.08	Asph. Conc.=0.04 Mi.; Misc. Work=0.04 Mi.; Pres. Conc. Beam Br. 2 Span 101'	$7,000 Plans $5	125,000
Chautauqua	FASS 59-11	Frewsburg-Clarks Corners Co. Rd. No. 60 Project S-469(2)	0.77	Bit. Double Surf. Treat Pavt.=0.73 Mi.; Misc. Work =0.04 Mi.; Pres. Conc. Beam Bridge 42.6'	$11,000 Plans $5	204,000
Erie (Rte. 20)	FARC 59-27	Transit Road, Pts. 1 & 4, S.H. 9217 Project F-1079(8)	0.20	Asph. Conc. Type 2A Pavt.=0.13 Mi.; Misc. Work= 0.07 Mi.; Pres. Conc. Beam. Br. 2 Span 120'	$7,000 Plans $5	130,000
Erie (Rte. 5)	R.C. 59-31	Athol Springs-Walden Cliffs, S.H. 5407	3.53	Asph. Conc. Pavt.	$20,000 Plans $5	363,000
Niagara (Rte. 18)	R.C. 59-32	Youngstown-Olcott, Pt. 1 and Pt. 2 S.H. 8306A-8324	3.32	Asph. Conc. Pavt.	$15,000 Plans $5	264,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg.; 30 West Main Street, Hornell, New York						
Chemung (Rte. 13)	FASH 59-7 FARC 59-29	Horseheads-Cayuta, Pt. 1 Horseheads-Cayuta, S.H. 5432A Project U-560(7)	3.29 (1.52 Acc.)	Asph. Conc. Pavt.=3.29 Mi. (Access=0.63 Mi Asph. Conc. Pavt. and 0.89 Mi. Cem. Conc. Pavt.); 3 Comp. W-F Beam Brs. 4 Span 247.5'; 2 Span 137' and 2 Span 134'; Widen Exist. 42' Sp. R.C. Closed Box Br.	$105,000 Plans $5	1,894,000
DISTRICT No. 9, Joseph C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Chenango (Rte. 12)	FARC 59-24	Greene-Oxford, Pt. 2, S.H. 8002 Norwich-Oxford, S.H. 5414 Project F-878(4)	5.25	9" Cem. Conc. Pavt. 24' Wide=4.82 Mi.; Asph Conc. Pavt.=0.42 Mi.; Misc. Work=0.01 Mi.; Pres. Conc. Beam Br. 1 Span 70'; Widen Exist. I-Beam Br. 42' Span	$90,000 Plans $5	1,638,000
Sullivan (Rtes. 17 & 42)	FATS 59-5	Bloomingburg-Monticello, Pt. 2, S.H. 5457-5457A Monticello Village: Broadway and Jefferson St., S.H. 5490 Monticello-Liberty, Pt. 1, S.H. 5035 Monticello-Woodbourne, Pt. 1, S.H. 8153 Project F-495(14)	6.65	Traffic Signs & Delineators	$8,000 Plans $5	149,000
DISTRICT No. 10, M. F. Gott, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Tour. Rte. 495)	FICBE 59-2P FITNE 59-1P	Interstate Route Connection 513, Cont. 3 (Cross Bronx Expressway and Throgs Neck Expressway) Project I-1112(12)	2.71 (5.04 Acc.)	9" Cem. Conc. Pavt. with Carb. Black 2 @ 36' Var. Wide=2.53 Mi.; Misc. Work=0.18 Mi. (Acc.=4.55 Mi. Asph. Conc. and 0.49 Mi. Cem. Conc. Pavt.); 6 Hy. Sep. Comp. Steel Girder—4 Sp. 225', 3 Sp. 113.2', 2 Sp. 017.5', 3 Sp. 168.8', 2 Span 166' and 2 Span 170'	$400,000 Plans $10	7,041,000
Suffolk (Rte. 27A)	FARC 59-26	Amityville-Babylon, S.H. 693 Project F-874(5)	0.32	Asph. Conc. Pavt.=0.12 Mi. Drain. & Misc. Work=0.20 Mi.	$7,000 Plans $5	131,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

Bids: May 14, 1959.

Boice Drain
Drainage District No. 2494

NOTICE OF LETTING OF
DRAIN CONTRACT AND
REVIEW OF APPORTIONMENTS

NOTICE IS HEREBY GIVEN, That I, HENRY V. HERRICK, County Drain Commissioner for the County of Wayne, State of Michigan, will now and until 11:00 A.M. E.S.T. on THURSDAY the 14th day of May A.D., 1959, receive sealed bids for the Cleaning Out, Relocating, Widening, Deepening, Straightening and Tiling of a certain drain known and designated as BOICE DRAIN, Drainage District No. 2494, located and established in the Townships of Romulus and Nankin and the Village of Wayne, Wayne County, Michigan, in the Office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan, at which time bids will be publicly opened and read by Mr. Henry V. Herrick, the Wayne County Drain Commissioner.

Said Drain consists of approximately 11,000 lineal feet of 12" to 108" diameter sewers in open cut and tunnel, together with junction chambers, manholes and appurtenances according to drawings and specifications prepared by Brender and Brender, Engineers of Wayne, Michigan.

In the construction of said drain, the following quantities and character of tile or pipe will be required:

1508 L.F. of 108 inch R.C. Pipe Sewer ASTM C-76-2
4878 L.F. of 102 inch R.C. Pipe Sewer ASTM C-76-2
3238 L.F. of 84 inch R.C. Pipe Sewer ASTM C-76-1
1400 L.F. of 60 inch R.C. Pipe Sewer ASTM C-76-1
380 L.F. of 36 inch R.C. Pipe Sewer ASTM C-76-1
255 L.F. of 24 inch Concrete Pipe
30 L.F. of 12 inch R.C.P. Sewer ASTM C-76-2
35 L.F. of 12 inch Clay Pipe ASTM C-200
3 each M.H. on 108" & 102" Pipe
6 each M.H. on 84" & 60" Pipe
7 each M.H. on 36" and under
2 each Transition Chamber
3 each Standard Catch Basins
1 each Headwall at River
1 each Inverted Syphon and Chambers
6 each Special Inlets

Said job will be let in accordance with plans now on file with the other papers pertaining to said Drain in the Office of the County Drain Commissioner for the County of Wayne, to which reference may be had by all parties interested, and bids will be made and received accordingly. Contract will be made with the lowest responsible bidder, for the entire job, who shall give adequate security for the performance of the work. I hereby reserve the right to reject any or all bids, waive any irregularities in bidding, and or to adjourn such letting to such time and place as I shall publicly announce.

The Drain Commissioner shall have the right to hold all bids for a period of One Hundred and Fifty (150) days after the opening thereof. No bidder shall have the right to withdraw his bid during such time.

The Drain Commissioner shall, within the period of 150 days, herein provided for the holding of bids, obtain the approval of the Wayne County Board of Auditors to the awarding of the contract to the lowest responsible bidder, and shall notify such bidder of his award of the contract. The Drain Commissioner shall be given 150 days from the date of receipt of bids to sell bonds in an amount sufficient to pay for this project, it being understood that if the Drain Commissioner shall not have marketed bonds in an amount sufficient to pay for this project within such 150 day period, no contract shall be executed. If within such 150 day period the Drain Commissioner shall successfully sell bonds in an amount to pay for the project, the Drain Commissioner shall forthwith notify the successful bidder of such sale and a contract with the successful bidder, shall be executed within ten (10) days from the date of notice of the sale of bonds. The bid, of the successful bidder, and the bond securing the same, shall remain in full force and effect until the contract is executed. If the bonds hereinbefore required to be sold are not marketed within the period provided above, the bid shall be deemed to be null and void and the bid deposit shall be returned to the successful bidder.

The 150 day period provided above for the sale of bonds and the giving of notice thereof may be extended from time to time by mutual agreement between the successful bidder and the Drain Commissioner.

The successful bidder shall not be required to execute performance bond, material lien bond, or provide the insurance herein otherwise required until he shall first have been notified of the sale of the bonds by the Drain Commissioner, and upon receipt of such notice, the successful bidder shall be required to execute and deposit such bonds and insurance as are required by the terms of the contract at the time of the execution thereof.

Copies of the plans and specifications may be secured from the Office of the Drain Commissioner of the County of Wayne, Michigan at 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five Dollars ($25.00), CHECK ONLY, will be required on each set of plans, which will be refunded upon their return in good order within thirty (30) calendar days after the opening of bids.

Any person desiring to bid on the above mentioned work will be required to deposit with the County Drain Commissioner a certified check or bank draft payable to the Wayne County Drain Commissioner, or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to five percent (5%) of the bid, shall be submitted with each bid.

The payments for the above mentioned work will be made as follows: IN CASH, FROM THE RECEIPTS OF THE SALE OF BONDS. Contractor may draw up to 80% of work completed from time to time and upon the approval of the Engineer. Taxes will be spread in Thirty (30) installments. First installment, December, 1959. Dated this 24th day of March A.D., 1959

HENRY V. HERRICK
County Drain Commissioner for the County of Wayne

Bids: April 23, 1959.

Power Authority of the State of New York Niagara Power Project Advertisement for Proposals for the Furnishing and Delivery of High Voltage Instrument Transformers for Niagara Switchyard
Specifications No. PA-N-25019
Niagara Contract No. NP26

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f. o. b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of 115 KV and 230 KV Instrument Transformers for the Niagara Switchyard in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 23rd day of April, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 73, 52, or 125 High Voltage Instrument Transformers in accordance with the bidding schedules.

Delivery of the High Voltage Instrument Transformers will be required beginning on or before February 15, 1960.

Plans, Specifications, and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the maximum gross sum bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 12, 1959.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Electrical Work at the Niagara Switchyard in Lewiston, Niagara County, New York
Specifications No. PA-N-25033
Niagara Contract No. N 11

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Electrical Work at the Niagara Switchyard in Lewiston, Niagara County, New York until 10:30 A.M. Eastern Daylight Saving Time on the 12th day of May, 1959, at the Authority's office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The work includes but is not limited to the installation of the following Authority furnished equipment consisting of 60,000 linear feet of high pressure oil pipe type cable, oil circuit breakers disconnecting switches, lighting arresters, carrier current equipment metering equipment, insulator assemblies and bus supports for 115 kv, 230 kv and 345 kv service, auto-transformers, metalclad switchgear, unit substations, motor control centers, control battery and appurtenances, miscellaneous power transformers, lightning system and all wire and cable; the furnishing and installing of miscellaneous electrical equipment, all conduit and grounding, switchyard buses and connections, cable trays; and making electrical connections to equipment of a basically nonelectrical nature such as air compressors, insulating oil system, ventilating fans, fire protection system and sump pumps.

The work also includes the following non-electrical items of work: Estimated:

159,200 cu. yds.	Excavation, unclassified, all types except Item A 1
8,100 linear ft.	Concrete culvert pipe, 12" to 36" Dia.
27,400 linear ft.	Subgrade drains
9,200 cu. yds.	Concrete
960,000 pounds	Reinforcement bars
2,540,000 pounds	Erection of switchyard structures and terminal towers
110,000 pounds	Installing genuine wrought iron pipe, fittings and valves 2½" to and including 6" in diameter
350,000 pounds	Installing cast iron pipe, fittings and valves

This work shall be completed on or before December 31, 1962.

Plans, Specifications and Proposal Forms for the work, may be obtained from the POWER AUTHORITY OF THE STATE OF NEW YORK, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-Five ($25.00) Dollars per initial set of contract documents, and Ten ($10.00) Dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the Offices of the Engineer, UHL, HALL & RICH, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the information for bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

W. S. CHAPIN
GENERAL MANAGER

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5183) will be received at Huron, South Dakota until 10 a.m. Central Standard Time, May 12, 1959, for furnishing labor and materials for outlet works modification at Shadehill Dam, Missouri River Basin Project, South Dakota. Location near Lemmon, South Dakota. Principal items are 2,850 cu. yds. excavation for structures; 2,100 cu. yds. backfill about structures; 420 bbls. furnishing and handling cement; 270 cu. yds. concrete in structures; Lump sum furnishing and installing steel pipe; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 30, 1959

Notice to Bidders

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., April 30, 1959 by Henry A Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E Smith State Office Building, Albany, N. Y. for:

Contract U. S.-73 for
New Sixty Foot Gates, Associated Electrical and Mechanical Equipment at Guard Gate 1 and Guard Gate 2 and New Bridge and Approaches at Guard Gate 2, Waterford, Saratoga County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor The Gov. Alfred E. Smith State Office Bldg., Albany, New York.

(b) Department of Public Works, 270 Broadway, New York City, N. Y.

(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U. S.-73 may be examined and obtained at the office of Mr. G. L. Nickerson, 353 Broadway, Albany, New York.

The deposit for Plans and Proposal Forms for Contract U. S.-73 is $25.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets is good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U. S.-73 is confidential and will be made known at the time of receiving bids. Proposals for Contract U. S.-73 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications. The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5185) will be received at Ogden, Utah until 10 a.m., Mountain Standard Time, May 14, 1959, for furnishing labor and materials for Willard Dam (Second Stage) Weber Basin Project, Utah. Location near Willard, Utah. Principal items are 10,090,000 cu. yds. excavation; 4,000 lin. ft., furnishing 8-inch diameter sewer pipe and constructing embankment toe drains with open joints; Lump Sum, construction of 5 piezometer terminal houses; and other work. Completion time 1,000 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: May 12, 1959.

Contract PN-510.003

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS 293, 294, 295 and WHARF
WHARF RECONSTRUCTION

Sealed proposals for the reconstruction of the wharf and dredging on the North side, inshore end, of City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 12, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, April 16, 1959

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The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

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ISSUE
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APRIL 20TH**

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• POSITIONS VACANT

Civil undergraduate engineering faculty assistance needed at ideal New England seacoast college located one hour from Boston. Send resume to Bradford Durfee College of Technology, Fall River, Mass.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Traffic Engineer—Immediate opportunity for a graduate Civil Engineer with three years' professional experience. Annual salary $7320-$8904. Address experience resume to Kern County Personnel Department, 3805 Chester Ave., Bakersfield California.

Experienced Reinforcing Steel Detailer. Excellent starting salary and usual benefits. New office and Plant under construction. Our employees know of this advertisement. P-1080, Engineering News-Record.

Engineers experienced in building construction wanted by long established central Illinois builder who has openings for two quantity survey engineers and one cost engineer. Salary commensurate with ability. Complete education, experience data and salary expected should be furnished in first reply. P-1346, Engineering News-Record.

General Superintendent for road-building. Familiar with gravel, asphalt and concrete. P-1474, Engineering News-Record.

• POSITIONS VACANT

Estimator—At least five (5) years experience estimating institutional, commercial and industrial construction under our Chief Estimator in Ohio-Michigan area. Graduate Engineer preferred but not necessary. Salary commensurate with experience. Good opportunity for right man. P-1320, Engineering News-Record.

Wanted—Experienced and competent engineers for design or/and supervision of construction of water works, sewerage, water treatment and sewage treatment plants. Permanent position. State age, experience, education, salary required. P-1398, Engineering News-Record.

Engineer—Job Supt. Opening with central Illinois contractor (Industrial-Commercial). Profit sharing, bright future. Give education, experience and salary in reply. J. L. Wroan and Sons, Inc., Normal, Illinois.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Asst. Prof. of Civil Engineering to teach fluid mechanics. Applicant must have MS in CE. Write to John A. Oakey, N. D. State College, Fargo, N. D., giving personal record and minimum acceptable 9 months salary.

Senior Civil Engineer for design work involving storm sewer, sanitary sewer, street paving and general municipal engineering projects. Salary range $6800 to $8800 with excellent fringe benefits. Degree in civil engineering plus six years experience required. Submit resume to City Engineer, City Hall, Schenectady, N. Y.

Wanted: Superintendent for State Highway Projects, Southern Ohio location. Write, giving full particulars to P-1462, Engineering News-Record.

• POSITIONS VACANT

Structural Engineer: Graduation from a four year college or university with major course work in structural engineering plus 3 years experience. Salary $6148-$7800 per annum. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

Mechanical Engineer: Graduation from a four year college or university with major course work in mechanical engineering—possession of a license as a mechanical engineer as issued by the State of Connecticut or any other state in which the standards for registration are not lower than those of Connecticut. Salary $6148-$7800 per annum. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

Contractor's Civil Engineer. Experienced Field & Office for Job at Harmon Air Force Base, Newfoundland. P-1425, Engineering News-Record.

Construction Supt., Mature. Experienced for Construction work. Air Force Base Newfoundland. P-1426, Engineering News-Record.

Young Engineers wanted for the development of water resources in the West by The Bureau of Reclamation which plans, designs, and builds engineering works to supply irrigation water to farms in the 17 western-most states. Many huge irrigation projects have been authorized by Congress and are now underway. Starting salaries of $4,490, $5,430, and $6,285 a year. Every type of civil engineering, electrical and mechanical engineering is encountered in the Bureau's design and construction work. Details given in civil service announcement. No. 10-1-1 (59) available from many post offices throughout the country or from the United States Civil Service Commission, Washington 25, D. C.

(Continued on page 186)

DISTRICT SALES REPRESENTATIVE

Rapidly expanding drilling equipment manufacturer needs district representatives for New York, Philadelphia, Atlanta, Birmingham, Chicago and Detroit.

Must be graduate civil or soils engineer, now traveling extensively, with experience in soils mechanics, automotive and construction equipment, to manage sales and call on civil service offices, engineers, laboratories, and contractors.

Opportunity for advancement to top management.

P-1306, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Heavy Construction SUPERINTENDENT

Our expanding Heavy Construction Division is considering applications for a superintendent in work involving pile driving, dock construction, bridges, locks and dams in locations throughout the South. Write fully, giving education, past experience, references, availability, salary requirements and personal data to

Personnel Director

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Alabama

OVERSEAS

An exclusive association for foreign construction workers. Current authenticated monthly publication on all large foreign construction projects. Write for free details.

Overseas Americans Inc., 7 West 44 St., New York 36, N. Y. Dept. L.

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Rochester, Pennsylvania
or
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Jackson 6, Mississippi

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OVERSEAS

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POWERHOUSE ENGINEER
on
MULTI-PURPOSE DAM PROJECT in THAILAND

Require qualified engineer with responsible construction experience in placement of reinforcing steel, mass concrete pours, mass concrete cooling on large dams or other mass concrete projects. Degree preferred but not essential. Must pass physical examination and security investigation.

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Write fully, include complete salary information to:

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c/o SVERDRUP & PARCEL, INC.
915 Olive Street, St. Louis 1, Mo.

ENGINEERS AND MATERIALS INSPECTORS

WANTED

TVA has openings for experienced civil, structural, electrical and mechanical engineers in its Division of Design located in Knoxville, Tennessee, and for electrical inspectors of materials located in district offices in Pittsburgh, Schenectady, and Milwaukee.

These positions are at the following grades and rates of pay:

Civil Engineers, grade SD-3	**$6800**	Highway and railroad bridge design
Civil Engineers, grade SD-2	**$5900**	Design civil features of steam and hydroelectric stations
Mechanical Engineers, grades SD-2, -3 and -4	**$5900-$7950**	Design mechanical features of heavy equipment for steam and hydroelectric stations
Electrical Engineers grades SD-2 and -3	**$5900-$6800**	Design electrical features of steam-electric and hydroelectric projects
Inspectors of Materials (Electrical), grades SE-5 and -6	**$5550-$6325**	Make engineering inspection and tests of electrical machinery, equipment, and materials purchased for the TVA construction program

The engineering jobs require a college degree in engineering or its equivalent with from one to five years of design and specification experience. The inspector of materials jobs require a college degree in electrical engineering or its equivalent training and experience in making engineering inspection and tests of electrical equipment and materials.

All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave, and retirement benefits. *Write to*

TENNESSEE VALLEY AUTHORITY, Division of Personnel, Knoxville, Tennessee.

(Continued from page 184)

• POSITIONS WANTED

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Project Manager Registered Engineer with extensive experience heavy construction Latin America—available immediately. PW-1268, Engineering News-Record.

Construction Superintendent B.S.C.E., Hwy. Earthwork, Highways, Flood Control, 15 yrs. exp. bidding, estimating, supervising. E. Eiswirth, Box 48, Clayton, Mo., Pr. 3-3984.

Asphalt Superintendent—Thirteen Years experience in paving, grading, bases, and allied work. Good management, leadership, and organizing ability. Salary plus yearly percentage bonus. Prefer southern or western location. PW-1394, Engineering News-Record.

Available April: Construction superintendant or resident engineer. 16 years. Experience in commercial, industrial, institutional, mass housing, highways, roads; includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Will relocate anywhere. B.S.C.E. and B.S.M.E. North Lake, Illinois. Call Filmore 4-7030.

Structural Engineer, BSCE, 34, Illinois Registered P. E. & Struct. Engr., 10 years experience including field, plant & Arch.-Engr. office. Desires responsible position. Will relocate. PW-1383, Engineering News-Record.

Construction Manager: Graduate C. E., Age 31 qualified in all phases of building construction management. Seeks position with responsibility, preferably in Northeast U. S. Presently employed. PW-1388, Engineering News-Record.

Purchasing Agent—Thorough knowledge of modern purchasing procedures with experience in heavy manufacturing (including foundry) and heavy construction including CPFF—Married—No children—will relocate for permanent position. PW-1400, Engineering News-Record.

Supt. of Equipment or Master Mechanic. Age 46, 28 years experience with all types and kind of construction equipment. Shop and field supervision available two weeks after interview. PW-1402, Engineering News-Record.

Man desires responsible, permanent position with General Contractor—Engineering type company. Age 41, steady, ambitious, executive ability. 8 years architectural and engineering offices as draftsman, designer, chief draftsman. 11 years prominent mid-west engineering-contractor offices, duties including chief draftsman; varied architectural, structural, mechanical design and coordination; field examination and supervision; client contact including sales, closing, and follow up, estimating and purchasing; design through complete construction; mainly industrial and commercial projects from minor alterations to $1,000,000. Minimum $12000. PW-1465, Engineering News-Record.

Foreign assignment desired by C.E., 34, married. Grad. M.S. background in waterfront & highways. Worked in Africa and Middle East. For resume and ref. write PW-1456, Engineering News-Record.

Auditor—U. S. Govt. reimbursement and overseas construction experience. N. Y. City resident. PW-1455, Engineering News-Record.

Executive Estimator — P.E.—20 yrs. background in diversified construction for general contractors as chief estimator, project manager, expediter, purchasing, past three years in Florida. Top reference. R. O. Reichard, 11760 S.W. 83 ct., Miami 56, Fla.

Machinery Erection Engineer-Superintendent specialized in all phases—heavy rigging installation-startup-test run. Ability to instruct—precision check-grouting—large variety industrial plants. Past jobs proof to assume complete responsibility. Available now. PW-1405, Engineering News-Record.

Sr. Project Eng. and Estimator, wide experience in mechanical engineering, office, field supervision, purchasing seeks resp. position in Florida. PW-1408, Engineering News-Record.

Civil Engr. BSCE 8 years experience in industrial construction—all phases—desires to relocate permanently in the southeast. Will consider maintenance. PW-1415, Engineering News-Record.

Controller—Competent management accountant experienced finance and control multi-million dollar construction contracts. Knowledge costs, budgets, taxes, systems and procedures, all types contracts, corporate organizations and joint ventures, Head Office and field operations. PW-1407, Engineering News-Record.

• POSITIONS WANTED

Hwy. Construction Supervisor B.S.C.E. Desires same with progressive, growing organization prefer salary plus percentage location: U.S.A., Europe or South America. PW-1434, Engineering News-Record.

Resident Engineer or Architect's Superintendent—experienced, competent. PW-1423, Engineering News-Record.

Construction Manager. Proven capability. $15,000.00 minimum. Available immediately. PW-1422, Engineering News-Record.

MS. 33. married. 10 years experience in bridge and industrial plants structural design, desires position with responsibility and future. Resume upon request. PW-1420, Engineering News-Record.

Supt. or General foreman—age 43—over 18 years experience highway construction supervising earthmoving equipment, excavating, drainage. Know men, methods and cost. Available at once. A-1 references. PW-1468, Engineering News-Record.

Prestressed Concrete—Bachelor and Masters degree in civil eng.; 3 years Navy Civil Engineer Corps; age 26, married; desire responsible position offering challenge and growth in prestress field; location anywhere; available Sept. 59. PW-1440, Engineering News-Record.

• POSITIONS WANTED

Architects & Engineers: Resident Project Manager, Superintendent, Inspector, 30 years experience construction field. Stateside & overseas. Available on short notice. PW-1457, Engineering News-Record.

Construction Superintendent—experienced industrial, chemical, commercial. Middle Atlantic States preferred. PW-1410, Engineering News-Record.

Construction Engineer 46, General Superintendent, Top Estimator, wide experience water & sewage disposal plants, institutional, public & commercial bldgs., heavy excavation, paving & sub-division development. Nine years with present associates. Will relocate. PW-1472, Engineering News-Record.

Engineer—CE with postgraduate study in Europe. 2 years in precast and prestressed concrete, pre- and post-tensioned. Project engineer on large projects. Experience includes project planning and supervision, purchasing, cost, and administrative duties. Seeks overseas or domestic position with responsibility and potential for growth. PW-1473, Engineering News-Record.

Registered Engineer and Land Surveyor interested in permanent position with Northern New Jersey builder. Expert all types of layout and surveying. Available about May 15, PW-1439, Engineering News-Record.

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or Dept. R-2, P. O. Box 510, Weiser, Idaho

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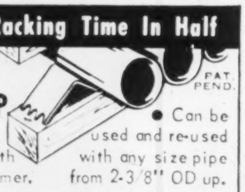

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Editorials

Curb Bid Shopping?

THIS IS A QUESTION that can be asked—and answered—in more ways than one. "Can bid shopping be curbed?" That is the way the question was posed in the headline of an article (ENR Jan. 29, p. 77) reporting formalized attemps to curb the practice.

"Should bid shopping be curbed?" That is the real question, according to recent Reader Comment (ENR Apr. 9, p. 9) claiming formal methods of control are unnecessary, unworkable.

Taking the question's first phrasing first, the answer is that bid shopping certainly can be curbed. ENR's report on what many states and cities are attempting indicated varying degrees of success with different methods. Bid depositories, bid registration and separate contracts all work despite disadvantages claimed for each.

As to whether bid shopping should be curbed, the answer is also yes, where competitive bidding is practiced. Bid shopping by contractors among subcontractors should be considered as wrong as irregularities in bidding procedures between owners and prime contractors.

Which way is the best to curb bid shopping? The one that works in any particular case is certainly good enough. St. Louis subcontractors and the local chapter of the Associated General Contractors have a code of ethical bidding practices which apparently works for them. Some say such codes are too idealistic to work. But this is nonsense. If such codes define good and evil practices, they will by this very definition point the way to proper practice by all with willingness to make them work.

He Paved a Way

THE DEATH OF FRANK LLOYD WRIGHT last week at the age of 89 removed a unique figure from the field of architecture. But he will influence its development for decades to come.

"He has moved men's minds . . . kindled men's hearts . . . was and is a titanic force." So said the citation when the American Institute of Architects awarded him its Gold Medal in 1949. He also aroused men's anger by many of his actions, yet he was eminently successful in attracting wealthy clients who paid dearly—and far above his original estimates—for his services. He was both a paradox and a power in his field.

Mr. Wright persistently flouted tradition. An independent thinker, he refused, with few exceptions, to admit indebtedness to his predecessors. There are certain resemblances, he would admit, but not influences.

Mr. Wright studied civil engineering at the University of Wisconsin, but left college three months short of receiving a degree. Shortly after, he became a draftsman with Chicago architects, Adler and Sullivan, pioneers in skyscraper architecture. In later life, Mr. Wright referred to Louis Sullivan as "Lieber Meister," conceding the inspiring influence of that great architect.

In private practice, Mr. Wright explored new fields, showed great skill in fitting structures to their sites, using cantilevers, applying engineering principles, employing materials in new ways and making repetitive detail attractive to the eye (ENR Dec. 5, 1957, p. 108). He made his innovations arresting, but, most important, he had the personality to let no one forget them.

A demagogue where his own designs were concerned, he was frequently insulting in his criticism of the designs of others. His was always "the greatest show on earth." As a consequence of his arrogance, he probably drew as much criticism as he gave. The result was that in the latter half of his career his designs were never ignored. Even his ridiculous proposal (from an economic viewpoint) of a mile-high building in 1957 received serious treatment in the architectural press.

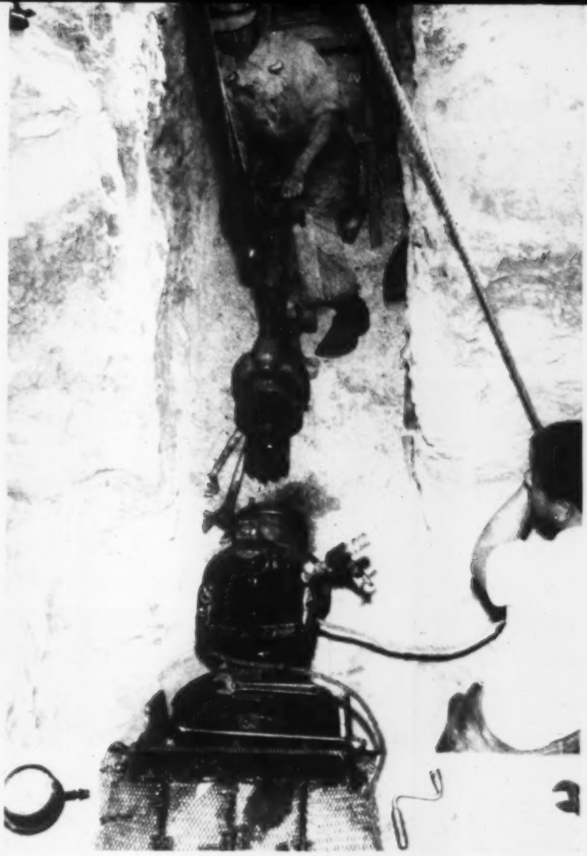
Though Mr. Wright's designs have not been copied in detail to any great extent, they nevertheless have served to further architectural progress, and will have a lasting influence. Just like the football player running interference for the ball carrier, he paved the way for other, less vociferous architects to try new designs. His innovations were so far advanced for his time that the innovations of others hardly seemed out of step.

Mr. Wright also devoted much time to educating and training young architects. In fact, he wrote in 1953, ". . . My work is for the young man in architecture." So it was. And architects, young and old, will be inspired by it for years to come.

Tombs and Troglodytes

UNDERGROUND CONSTRUCTION has figured strongly in the news of late, and mostly with macabre overtones. The dedication of Spain's huge underground tomb for its civil war dead, for example, came in the same week as the announcement that the operations center for the North American Air Defense Command would be placed underground at Colorado Springs, requiring its personnel to work as troglodytes in order to stay alive if and when war again comes. Underground construction, in truly mammoth proportions, will also be involved in the death-dealing ICBM bases.

But while death may in a certain measure relate the Spanish tomb and the U. S. troglodytic projects to one another, they can be coupled even more significantly. It required sixteen years and many thousands of hand laborers to tunnel the Spanish crypt into the mountainside. In contrast no such prodigal use of either time or manpower can be tolerated for the work we have to do. The challenge being laid down to America's tunneling specialists is without precedent.



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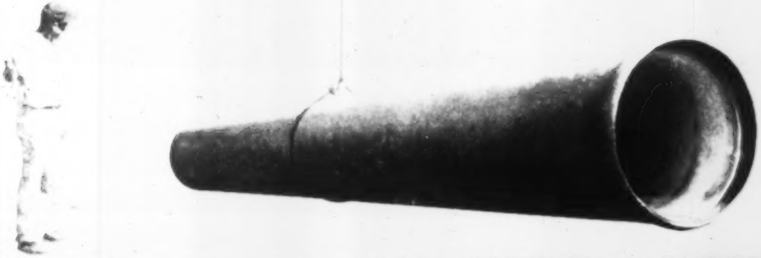

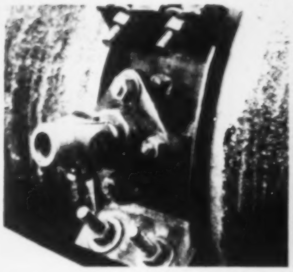

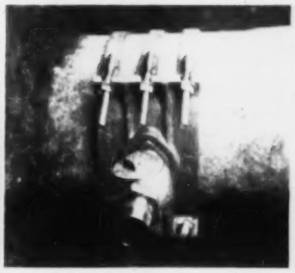

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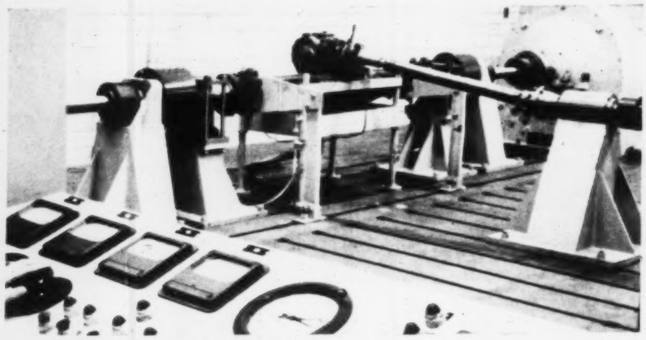

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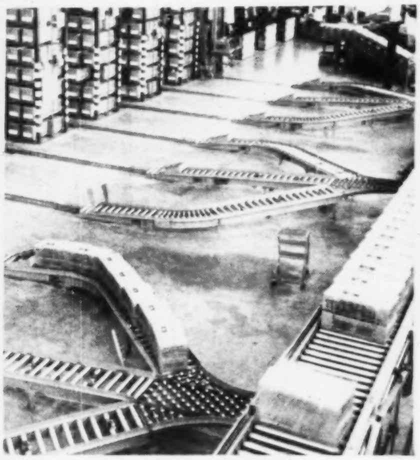

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